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ESSAYS, MONOGRAPHS, AND CASES.

On the Animal Substances employed as Medicines by the Ancients. By G. J. Fisher, A.M., M.D., of Sing Sing, N. Y. (Read before the Westchester County Medical Society, June 11th, 1861.)

"Declare the past and present state of things."—Dryden.

Having on a number of occasions observed that various animal substances or products are, in this enlightened day, employed as popular and domestic remedies in the treatment of certain diseases and injuries, I have been led to investigate the history of their origin and use. An attempt has been made to ascertain how far their employment has resulted from accident or superstition, and to determine whether their continuance in use depended upon their possessing any of the medicinal properties which have been ascribed to them, or is in consequence of a blind devotion to authority, which has resulted in an established routine. Also, to determine, as far as my leisure and available means of research would afford, whether the profession or laity were most responsible for having introduced into the Materia Medica a list of animal products so disgusting, that their narration would produce a nausea in the least fastidious.

After a careful perusal of the works of Hippocrates, Celsus, Paulus Ægineta, MM. Pomet, Lemery, and Tournefort's History of Drugs, James' Medicinal Dictionary, (3 vols., folio, London, 1743,) the Dis-

pensatories of Quincy, and other authors of over a century past, I was not a little surprised to find that most of the absurd animal remedies now in popular use can be traced to a remote antiquity; indeed, that the few which are still occasionally employed by the non-professional are the merest moiety of the formidable and sickening catalogue which swelled the list of simples of the ancient Materia Medica, large numbers of which were continued in the Dispensatories until within about a century of the present time.

The substances under consideration were doubtless first used in the treatment of disease by physicians. Their introduction into the Materia Medica was in consequence of preconceived hypotheses and false analogies, resulting from a want of knowledge of general and organic chemistry, and of the physiology of digestion and nutrition. These false theories led them to *expect* certain results, which a blind devotion to their favorite views rendered them unable to discover were either useless or positively injurious. The supposed virtues of the article having been declared by one high in authority, it continued in use in obedience to this declaration, and hence by an established custom.

It was a favorite idea of the ancient physicians, that the use of the healthy parts or organs of animals, as food or medicine, would restore to health similar enfeebled or diseased tissues or organs in the human body.

Thus it was in the ancient and early history of medicine, and to no little extent is it now true, that the mass of medical men depend on the observations, experience, and opinions of a few leading spirits, who are supposed to possess superior advantages or talent.

In Pomet's "Complete History of Drugs," dedicated, by permission, to Sir Hans Sloane, and published only a little more than a century ago, nearly one hundred quarto pages are devoted to an account of animal medicines. The following is a specimen of his therapeutical logic, to be found in the preface of the work:

"The different degrees of volatility that are in animal substances give them different virtues one from the other: so those which have so very volatile salts are usually reckoned cephalick and diaphoretick; as the *Viper, Human Skull, Hart's-horn, Goat's blood, Elk's-claw;* because the matter being heated in the *Viscera*, pushes forth their salts into the brain, and by the pores of the body. Those whose substance is less volatile have an aperitive virtue, such as is to be met withal in *Hog-lice* and *Craw-fish;* because the salts of these animals being heavier, are more inclinable to precipitate and open the urinary passages."

The Materia Medica was in harmony with the philosophy. As science advances, and the investigation of the properties and effects of medicinal agents is rigidly pursued, notwithstanding the continued discovery of new territory, and of new elements, both organic and inorganic, the tendency is to constantly diminish the number of substances worthy of a place in our Pharmacopœias.

The Materia Medica of Dioscorides contained an account of the history and virtues of nine hundred and fifty-eight simples; embracing ninety minerals, seven hundred plants, and one hundred and sixty-eight animal substances; which is nearly triple the number of officinal simples contained in any of the Dispensatories of the present day.

The last edition of the United States Pharmacopœia (1850) enumerates in the officinal list of the Materia Medica two hundred and forty-four articles, of which one hundred and ninety are vegetable, fifty-four mineral, and only sixteen animal substances. The secondary list, of the same edition, contains ninety-one articles, all of which are vegetable. The total number of articles in the officinal and secondary lists of the National Pharmacopœia is three hundred and thirty-five, of which two hundred and eighty are derived from the vegetable, fifty-four from the mineral, and sixteen only from the animal kingdom.

The animal products are as follows: Lard, suet, neat's-foot oil, cod-liver oil, spermaceti, isinglass, egg, castor, musk, Spanish-flies, potato-flies, cochineal, sponge, bone, animal charcoal, and oyster-shell. More than half of these are not supposed to possess any strictly medicinal properties, being used chiefly as pharmaceutical auxiliaries.

The following is a list of the animal substances which I find particularly mentioned in the works above referred to. A large proportion of them were employed as medicines previous to the time of Hippocrates, and continued in use until within a century of the present time.

It will be seen that every class of the animal kingdom contributed to the ancient Materia Medica. I have attempted to arrange them, from all the above-cited sources, under the following appropriate heads—mammals, birds, reptiles, fishes, crustaceans, insects, mollusks, and radiates.

1. Mammals.

Supplied the following Drugs: (?)

Man—Mummy, man's skull, moss of a dead man's skull, dead man's hand. Royal touch, hair, nails, fat, marrow, heart, blood, milk, semen, ear-wax, sweat, saliva, urine, stone in the bladder, menstrual

discharges, dung, secundines or after-birth, and the membrane found around the head of the fœtus.

Cow—The bile and dung.

Bull—The horn and blood.

Ox—Fat, bile, dung, ankle and thigh bones.

Goat—Fat, liver, bile, blood, urine, dung, horn, and balls of hair found in the stomach.

Bezoar—Stone in the stomach, (Bezoar stone.)

Sheep—Wool, skin, brain, bile, dung.

Camel—Brain, rennet, urine.

Stag—Flesh, blood, sweat, tears, fat, marrow, brain, lungs, heart, bone of the stag's heart, (*os de corde cervi,*) balls of hair found in the stomach, horn, hoof, tooth, tail, testicle, and penis.

Roebuck—Liver, bile, rennet, dung.

Hart—The horn.

Antelope—The rennet.

Chamois—Blood, fat, liver, bile, dung, and the stone found in the stomach.

Elk—Hoof.

Horse—Blood, rennet, dung.

Ass—Liver, dung.

Mule—Urine.

Elephant—Teeth, bones, hoofs.

Rhinoceros—Horn.

Hippopotamus—Testicle, fat, ashes. "A ring made of the pizzle, and worn, is said to cure the cramp."—POMET.

Hog—Fat, bile, dung, ankle-bone.

Hedgehog—Flesh, skin.

Lion—Fat.

Cat—Dung. Blood of black cat's tail, (modern.)

Hyæna—Bile.

Bear—Skin, fat, blood, liver, bile.

Wolf—Liver, dung.

Fox—Whole animal, fat, lungs.

Dog—Fat, liver, dung.

Weasel—Entire animal, brain, stomach.

Bat—Blood.

Mouse—Head, dung.

Musk-rat—Testicle.

Beaver—Castor.

Hare—Ashes, hair, head, brain, eye, lungs, heart, blood, coagulum, liver, bile, kidneys, uterus, testicle, astragalus, rennet, dung.

Seal—Rennet.

Sea-Cow—Bone or stone in the head.

Unicorn (?)—Horn.

Whale—Spermaceti, which, Pomet says, is the brain, and that "In the year 1688, there was one taken by a *Spanish* ship, that carried it to *St. Sebastian's*, from the Head of which were taken twenty-four barrels of Brain, and from the Body ninety-six barrels of Fat. They ought to be undeceived who believe that *Sperma Ceti* is anything else but the Brain of the *Cachalot*; and I can affirm this with Certainty."

2. Birds. ("*Medicinal Birds.*")—Pomet.

Domestic Fowl—Fat, blood, bile, dung. The *Cock*, his brain; and the *Hen*, her stomach.

Duck, Tame Pigeon, Owl—Blood.

Peacock, Stork, Starling—Dung.

Hawk, Partridge—Bile.

Goose—Blood, fat, dung.

Wild Pigeon—Blood, stomach, dung.

Ring-Dove—Blood, dung.

Swallow—Entire bird, blood, brain, dung.

Cormorant—Liver, stomach.

Lark, Sparrow—Entire bird.

Kite—Head.

Ostrich—Flesh, skin of the stomach, fat.

Eagle—Flesh, bile, brain, dung, testicles, and "a stone that is found at the entrance of the hole where the bird builds her nest." (The eagle-stones were said to procure easy and safe labor, and to prevent miscarriage.)

Vulture—Flesh, fat, brain, gall, dung.

Frigate or Man-of-War Bird—"The oil or fat is a sovereign remedy for *sciatica* pains, and for all others proceeding from a cold cause."

Birds' Nests—Several kinds were in use, especially those of a species of swallow found in China. Pomet says, "The Chinese assign mighty virtues to this nest; as it nourishes extremely, being boiled in water with a fowl and ginger. They reckon it very good for curing pains at the stomach, and for restoring those that are in a languishing condition."

3. Reptiles.

Crocodile—Blood, dung.

Lizard—Entire animal, head, liver, blood, dung.

Chalcidic Lizard—Entire animal.

Sea-Skink, (a kind of lizard)—Entire animal, kidneys, belly, or stomach.

Swift—Entire animal.

Salamander—Entire animal.

Chamelion—Blood.

Frog—Entire animal, blood.

Toad—Entire animal, blood, oil, volatile salt, and stone in the head.

Turtle, (*Land*)—Blood, oil.

Tortoise, (*Sea*)—Volatile salt, oil, bile, blood.

Serpent—Skin.

Viper—Trunk separated from the skin, intestines, &c., fat, skin, gall, heart, liver, volatile salt of the entire animal.

Pomet says, "You ought to be careful that every bundle or parcel of vipers, which is usually a dozen, have the hearts and livers along with them, these being the most noble parts of the animal. Vipers ought to be heavy, large, long, well dried, and the freshest killed that can be got," &c. He also adds, "Both for external and internal uses there is scarcely found a more universal medicine than the volatile salts of vipers." "All other preparations of vipers, as powders, fixed salts, tinctures, decoctions, broths, jellies, wines, essences, troches, elixirs, extracts, &c., compared with the volatile salt, are nothing, for in that is to be found the sum of all that is in the viper."

4. FISHES.

Narwal, (sea-unicorn,) horn, oil.

Shark, bone of the head, spawn, and fossil teeth, which were worn in strings about the neck of children to aid in cutting their teeth, &c.

Anchovy, head; the whole fish was applied to the feet in fevers.

Herring, head. *Shad*, entire. *Tunny* or *Spanish Mackerel*, volatile salt. *Torpedo*, live animal, oil. *Triglar* or *Mullet*, entire. *Pastinaca marina*, whole fish.

Calionimus, bile. *Hippocampus*, entire, ashes.

Sea-Scorpion, oil, bile. *Fish* of several species, isinglass. *Aleyonia* consisted of the bones of fishes vomited by the kingfisher.

5. CRUSTACEANS.

Crab, (sea,) entire, ashes, claws, eyes. (?)

Hermit Crab or *Soldier*, ashes, oil. *Squilla*, entire.

6. INSECTS AND WORMS.

Ants, volatile salt. *Grasshopper*. *Cicada* or *Harvest Fly*. *Can-*

tharides. *Cockroach*, entrails. *Meloe*. *Buprestis*. *Bees* or *Honey-Flies*, whole insect, honey, wax. *Dog-tick*. *Spider*, entire, web. *Caterpillar*. *Cochineal*. *Centipede*. *Scorpion*, ashes, oil. *Earth-Worms*, volatile salt.

Silk-worm, cocoon: the raw silk taken in powder, says Pomet, "makes the heart pleasant, the spirits brisk, and cleanses the blood."

Millepedes, (sow-bugs or hog-lice,) volatile salt, oil, and powder. The above-cited author says, "Of millepedes there are many preparations, but the best way of taking them is certainly swallowing them alive; and the next to that, their expression made with wine."

7. Mollusks.

Harpa, *Nerita*, *Helix pomatia*, and other snails. *Solen*, *Oyster*, *Purpura*. *Buccium*, many species. *Limpet*, *Pearl-Shells*, several species. *Dentalium*, *Teredo*. *Strombus*, and other shells, furnished their opercula or lids. *Cuttle-fish*, entire, bone, ink-fluid. "The eggs or spawn of the cuttle-fish provoke urine and the terms."—Pomet.

It is impossible to identify many of the shells which were used in ancient medicine. Shells generally were regarded as "good sweeteners of the blood; also good against a canine appetite, a flux of the belly, and a hæmorrhage."

8. Radiates.

Echinus, (or sea-urchin, or sea-eggs,) *Coral*, *Sponge*. After such a list, who would not say—

> "Throw physic to the dogs, I 'll none of it?"—Shak.

It is possible that by a more diligent and critical examination of ancient Pharmacopœias and Dispensatories, the list of animal drugs could have been further extended. However, I have presented, at the lowest computation, a catalogue of two hundred and eighty-five articles, of which, 38 mammals supplied one hundred and thirty-five drugs, 21 birds forty-seven, 13 reptiles thirty-four, 12 fishes twenty one, 3 crustaceans seven, 17 insects and worms twenty-three, 15 mollusks fifteen, 3 radiates three; total, 122 animals specified, furnished 285 simples of the materia medica employed by the ancients, most of which were continued in quite general use until within about a century of the present date!

To treat of the virtues which were attributed to these articles, and the countless preparations into which they entered, would require a large folio volume. The limit of the present essay will barely permit

me briefly to allude, by way of illustration, to some of the medicinal properties and uses of the several parts of the stag, and of the human body, as recorded in the old Dispensatories.

The above table or catalogue of animal medicines will not be found in any work; it is the result of considerable research, extended over many volumes.

It was at first contemplated to classify the animal products, and treat of their virtues and application under distinct heads; space would not permit. We find in the above list 23 varieties of blood, 15 of bile, 4 of urine, 7 of brain, 13 of liver, 26 of fæces, &c., &c.; almost *ad infinitum*, certainly *ad nauseam*.

The examples selected will serve to illustrate the great variety of products obtained from a single body, the false and superstitious notions which led to their employment, and the absurd ideas entertained in regard to the effects supposed to have been produced by them in the treatment of disease.

The Stag.—This was regarded as one of the most important "medicinal animals" of the ancients. The head and horns have been used as the coat of arms or symbol of Pharmacy from time immemorial, and are yet quite generally to be seen over the doors of the apothecaries in Belgium and other Continental countries.

Almost every portion of the stag was supposed to possess medical virtues, and was used as an antidote to poisons.

The *dried tears* of the stag, which are the sordes collected in the inner angle of the eye, resembling indurated ear-wax, in doses of three or four grains, were said to be good "against poisons, contagious diseases, difficult labors, and for expelling the dead fœtus. As an amulet, when tied to any part of the body, it was reputed to prove effectual against poisons."

The *tooth*, and the *hoof* (if taken from one of the right feet) possessed the same virtue.

The *stag's skin* was used against strangulations of the womb.

"A belt made of the skin of a stag, killed while in the act of copulating with the female, is found from experience to be possessed of singular virtues. When applied to the loins, it is said infallibly to promote the expulsion of the fœtus. The shavings of the skin taken off with pumice-stone, and triturated with vinegar, are said to be proper for anointing an erysipelas. A man clothed in a stag's skin is proof against poison."—*James' Med. Dic.*

The enmity between the stag and serpents was supposed to account for its anti-toxical properties.

The *brain* was used for pains in the hips and sides, and also for the cure of fractures; "but," says Dr. James, (vide *Med. Dic.*, 1743,) "as we have great plenty of such mollifying medicines, the brain of this animal is not at present kept in the shops."

The *rennet* of the calf of the red deer was used for "stopping immoderate discharges of the menses, and resolving coagulated milk; also for the cure of epilepsy."

The *heart*, and the *bone of the stag's heart*, (which was either from the valves or large vessels occasionally found ossified,) were used to antidote poisons; to procure longevity; as a specific against abortion; for the cure of pleurisy and diseases of the heart. The usual dose was ʒss. in powder. It was also used as an amulet in violent hæmorrhages, and as a defence against the bites of venomous animals.

"If the testicles or pudenda of any animal be anointed with the *stag's tail*, calcined and triturated with wine, it quickens the desire of venery in that animal, and it produces the same effects in men; it is said that by its acrimony it irritates the fibres, and produces that degree of rigidity requisite for a due erection." Dr. James says, "The tail of this animal is not, however, kept in the shops."

The *marrow* of the bones of the stag was used as an application to the neck and mouth of the womb, for inflammation, induration, or ulceration. It was also esteemed as an antidote to poisons, and "to adorn the skin."

The *fat* or suet of this animal, according to Dioscorides, was used to soften tumors, for ulcers, dysentery, &c. Hoffman directed it to be laid on linen cloth, melted by the fire, and applied to the gums, and says, "it surprisingly alleviates toothaches, and extracts the worms which create the pain."

The *ankle-bone* of the stag was accounted a remedy for colic, dysentery, and stone in the bladder.

The *horns* were the most celebrated in medicine; from these the spirit of hartshorn or aqua ammonia was first distilled; it had many virtues ascribed to it.

The *blood*, when dried, was used in clysters to cure ulcerations of the intestines and inveterate fluxes. It was drank in wine to antidote poisons, and to cure the gout and pleurisy. Dose from half a scruple to a drachm.

The *lungs* of the stag, when smoked and dried, were considered a valuable medicine for cough and consumption. Pliny highly recommended them, but Dr. James remarks, "We can assign no other rea-

son for this, than that stags, by their swiftness, demonstrate the goodness of their lungs."

The *elaphopila*, or hairs collected in the stomach of the stag, goat, and some other animals, were used to restrain hæmorrhages, and as a cure for vertigo. These effects were supposed to be in consequence of the animals climbing very steep rocks without being giddy.

"The *penis* of the stag was said to be of singular use in medicine; but the stag must be killed in the time of coition, for by this means it is of the greatest efficacy in stimulating to venery, owing to the hot disposition of the animal. A drachm of it with a poached egg, and a small quantity of generous wine, proves a very powerful stimulus to venery; also as a powder rubbed on the testicles. If the stag is killed at any time except when in the act of copulation, its penis is an excellent remedy against dysentery and pleurisy; either in the form of a powder of ℥ss. to ℥j., or shaven down. It is also used in decoction, and prepared in a jelly, for the cure of colic and hysteria. Dioscorides tells us, that those who are bitten by vipers receive relief by the penis of the stag, triturated and drank with wine.

Man.—"That experience which physicians in different ages have had of the good effects which the parts or excrements of a dead or living human body have had in the healing its like in many diseases, have engaged them often rather to have recourse to it than to what might be had of beasts, and to give the proper descriptions and preparations of the parts of the human body."—(POMET.)

The human *mummy*, especially the Egyptian, was formerly used in medicine. It was retained in the Edinburgh and Quincy's Dispensatories till within a century of the present time. Dr. James says, (1745,) "The true Egyptian mummies are very seldom found in the shops, but are what ought to be used in medicine. The next in goodness to these is what is called the Arabian mummy, which is a thick liquor, of a dark color and aromatic smell, flowing out of the bodies, embalmed with myrrh, aloes, &c."

A spurious article of mummy was often sold in the shops. Pomet relates in detail the "rogueries of the Jews," from an eye-witness, who, at Alexandria, was permitted to enter the house of a mummy manufacturer. "The Jew at last opened his magazine or storehouse, and showed him several bodies piled one upon another. Then, after a reflection of a quarter of an hour, he asked him what drugs he made use of, and what sort of bodies were fit for his service. The Jew answered him, that as to the dead, he took such bodies as he could get, whether they died of a common disease, or of some conta-

gion. And as to the drugs, that they were nothing but a heap of several old drugs mixed together, which he applied to the bodies; which, after he had dried in an oven, he sent into Europe, and that he was amazed to see the *Christians* were lovers of such filthiness."

"Mummy is reckoned a good resolvent of coagulated blood, after falls or blows, and a good antiseptic; acting not only by its bituminous and balsamic parts, but also by the volatile salts of the carcass from which it is made. By dissolving it in spirit of wine, we easily obtain a tincture which contains its balsamic qualities. It is given in epilepsies, vertigoes, and palsies; the dose is two drachms, in powder or bolus. It also stops mortifications, heals wounds, and is an ingredient in many compositions."

Human fat, *sweat*, and *saliva* are all retained in the Dispensatory of Quincy. Pomet says, "As everybody knows, in Paris, the public executioner sells it to those that want it, so the druggists and apothecaries sell very little." "Man's grease is emollient, discussive, anodyne, and anti-paralytic. It is good against gout, &c."

Human ear-wax, says Paulus Ægineta, "cures fissures of the skin about the roots of the nails." Pliny assures us that the wax of the ears cures bites inflicted by men; also the bites of serpents and scorpions, if applied immediately to the part affected. It had many other uses. Internally half a drachm of human ear-wax was used as a specific for colic. It was applied to weak eyes, to boils, wounds, inflammations, tumors of the joints, &c. Pauli says, "Though this unusual and nauseous medicine were of so much worth and excellence, that nothing could be objected against it, yet there are many remedies already approved, and more pleasant in themselves, by which the intentions with which this medicine is prescribed may be equally well answered: for who doubts the salutary effects produced by spermaceti in the colic? Or who doubts that the balsam of Peru or Copaiva are excellent vulneraries? Not to mention other things exhibited, with greater applause, by more cleanly and skillful physicians."

Human Urine.—Quincy remarks, "Some have got a notion of this being good for the scurvy, and drink their own water for that end. Some commend it, boiled to the consistence of honey, for rheumatic pains, rubbing it into the parts affected; in which case it may do good, because it cannot but be very penetrating."*

"*Human dung*," says Dr. James, (*Med. Dict.*,) "applied fresh,

* Hartman says (*Opera. fol., p.* 72,) he has often witnessed amongst the poor that difficult labor has been accelerated by a draught of the husband's urine!

preserves wounds from inflammation, and at the same time conglutinates them; dried and rubbed on the parts, it is reported to give relief under the quinsy."

"*The human secundines*, or after-birth," says the same author, "is reported to be of some use in medicine. Thus it is ordered to be applied warm, as it comes from the uterus, to the face, in order to remove freckles. A water is also distilled from it for destroying spots and blemishes on the face. When dried and reduced to a powder, it is used internally against epilepsies; for accelerating the delivery of the fœtus, and allaying the pains of wounds. The dose of the powder is from ℈ss. to ℈ij."

The human skull has been highly celebrated for the medicinal virtues it is said to exert in the cure of epilepsy, apoplexy, dysentery, fevers, and arthritic disorders. As an amulet, it was worn to cure consumption, hæmorrhage, and incontinence of urine. Pomet says, "Some virtues are attributed to the skulls taken from gibbets, but in all probability the heats and colds of the seasons have dissipated the greater part. The skulls of criminals newly hanged, stripped of the fleshy membrane, and the brains taken out, being well washed and dried, and separated with a saw from the lower part, are, or ought to be, what the druggists sell by the name of *Human Skull*." Reiger cautions the physician who prescribes this medicine uncalcined, "to take care that the skull which is used did not belong to a person who was infected with the pox, which frequently attacks this part." Juncker remarks, "When exhibited with other ingredients it is sometimes found of some efficacy in epilepsies, but very seldom when given alone." The principal shop composition in which a skull is an ingredient, says Dr. James, (*Med. Dict.*,) is the Pulvis ad Guttetam.

Quincy very seriously remarks, (1749,) "Man's skull, it is to be feared, has obtained a place in medicine more from a whimsical philosophy than on any other account; and therefore we find it appropriated to distempers of the head chiefly."

"*The moss of a dead man's skull*," under the title of *Usnea Cranii Humani*, was formerly used in all diseases of the head. "The English druggists generally bring these heads from Ireland, where they frequently let the bodies of criminals hang on the gibbet till they fall to pieces. You may see in the druggists' shops of London some of these heads entirely covered with moss, and some that only have the moss growing on some parts; and we ought not to be surprised at the growth of this moss on the skulls of dead men unburied, since we daily see the hair of the head, beard, and some other parts of the human

body grow after death, as long as there is any moisture left to supply nourishment to the part; and that the same thing happens to the nails is evident; but whether it will hold as to the teeth, as some pretend, I dare not venture to affirm."—(POMET.) Juncker, in his Therapeutic, affirms that Usnea renders the body so impenetrable, as not to be pierced with a musket-ball. Some writers declare that the moss gathered from the skulls of hanged persons is best; but Paracelsus asserts, that what is found on the skulls of persons broken on the wheel is no less valuable. It was thought that the vital and animal spirits of the deceased person are concentrated in this substance.

Manus Hominis Mortui.—The hand of a dead man was retained in the dispensatories as late as 1749. It was supposed to be of great efficacy in dispersing scrofulous tumors. The part was to be rubbed with the dead hand for some time; and report furnishes us with many instances of cures done hereby, "some of which," says Quincy, "may not improbably be true, both as the imagination in the patient contributes much to such efficacies, and because the sensations which stroking in that manner gives is somewhat surprising, and occasions a shuddering chilliness upon the part touched, which may, in many cases, put the fibres in such contractions as to loosen, shake off, and dislodge the obstructed matter; in which consists the cure. But such practice," he adds, "is too whimsical to be countenanced by any of worth in the profession of physic."

I will omit the remainder of the human products, which were employed by our professional fathers in the treatment of disease, merely mentioning the *Manus Regalis*, or *Royal Touch*, which is included in the officinal list of Quincy's Dispensatory, as a cure for scrofula. After expressing his opinion of its uselessness, he earnestly remarks: "However, perhaps the present Royal Family, whose merits have so justly placed them over us, will never condescend to make use of such a stratagem to awe their superstitious subjects, as may have been necessary to a weak or tyrannical governor."

Here ends my account of the odious animal materia medica, so anciently, and yet so recently employed, in the treatment of human maladies. How striking the contrast of the present neat and pleasant establishment of the apothecary, containing the refined and elegant preparations of modern pharmacy, with the loathsome shops of former days, on whose shelves were piled the moss-covered, grinning skulls of executed felons; the grim and ghastly mummies of ancient Egypt; bundles of dried and contorted vipers, etc., etc.! It must

have been in a shop of this character that Romeo applied for a drachm of poison.

"I do remember an apothecary,—
* * * * * * * *
"And in his needy shop a tortoise hung,
An alligator stuff'd, and other skins
Of ill-shaped fishes; and about his shelves
A beggarly account of empty boxes,
Green earthen pots, bladders and musty seeds,
Remnants of pack-thread, and old cakes of roses,
Were thinly scatter'd, to make up a show."

Strange as it may appear to any intelligent person, that such absurd and disgusting remedies should ever have been employed, even in the dark and ignorant periods of the world's history; yet how much more remarkable is the fact that, in this enlightened age, with all the facilities for a free and universal diffusion of general and scientific knowledge, credulity and traditional superstition still prevail to so humiliating a degree, that many equally vile and irrational means are employed by quacks, and as domestic remedies, at the present moment!

I have known a medical man, who passed in the community as a respectable practitioner, to prescribe a living hen to be split open and applied to the abdomen, for an inflammation of the bowels. On another occasion, I knew the same man to order a calf to be quickly killed, its liver taken out, and applied, while warm and reeking with blood, to the abdomen of a young girl, who was within a few hours of death from peritonitis! In both cases the doctor explained the *modus operandi* as follows: The hen (or liver) is applied to *draw out* the inflammation; if it succeeds, the flesh will become dark, and speedily emit a putrescent odor! I have frequently known the common people, and, indeed, some otherwise very sensible persons, to give their children large doses of human urine and molasses for croup. A man in Sing Sing, who possesses common sense on common subjects, gave his child, which was about one year old, a quantity of human fæces mixed with urine, as a remedy for spurious croup! I was then called, and found the unfortunate infant prostrated from excessive and persistent vomiting, occasioned by this vilest of vile doses, from the effects of which, and not from croup, the miserable babe died.

Only a few days since, a quack in Peekskill prescribed for a former patient of mine, who had cystic ovarian disease, a decoction or infu-

sion of honey-bees, as a diuretic, to remove the dropsy! I have several times found ladies who were suffering with inflammation or abscess of the breast, with huge poultices of fresh cow-dung, which had been applied to the gland, at the urgent solicitation of some *friend*. I have also seen the fæces of the common hen applied to felons. Sheep or goat's dung, given in infusion, is not an unpopular remedy at the present time for the cure of measles. I have known several persons who have taken this "nanny-berry tea."

A *doctor-woman* in Sing Sing is in the habit of curing the shingles by that time-honored remedy, the blood of a black cat's tail.

While suffering under an attack of tonsillitis, I have been entreated to apply to the throat a living frog, which it was said would hasten suppuration and the bursting of the abscess. The frog is said to die in a very short time after it is applied; and numerous "modern instances" were adduced in proof of the efficacy of this ranine treatment. I have known swallows' nests, boiled in milk, to be used as a poultice for quinsy in several instances.

The royal touch is not employed in this country, for the simple reason that we have no kings or queens; but, as a substitute, we have "the seventh son of a seventh son," who is generally believed to possess the supernatural power to disperse all scrofulous diseases. I have heard men and women, in whose veracity on all subjects but medicine I would have implicit confidence, declare that they had known and seen patients cured within a few weeks of obstinate and chronic scrofulous swellings and ulcers, by the laying on of hands of one of these miraculous individuals.

At the present time there is a stupendous quack in the City of New York, one whose fame is not unknown in other localities in this country, whose rooms are crowded by hundreds of patients, many, if not most, of whom are from among the opulent of that great metropolis. This founder of the Newtonian system of cure, who so rapidly accumulates silver and gold, and crutches and canes, from the *weak* and *lame* who seek his marvelous skill, removes their manifold ills in the twinkling of an eye, by the mere touch, and his sacrilegious invocations of Deity. Than this vile and impious wretch, the world has never produced a more successful charlatan.

He claimed to cure every ill that flesh is heir to—ovarian, uterine, and other tumors, &c., &c. I knew several intelligent persons who applied to him, who were assured that their tumors, &c., would speedily vanish.

From these and other facts which could be accumulated, it would

at first view appear that superstition and credulity are nearly as rife at the present as at any former period of time. It is not, however, so universal; it is perhaps restricted to a class, which I am sorry to say is yet very large, in whom the organ of marvelousness is hypertrophied—a condition which manifests itself in seeking Spiritualism, Clairvoyance, Astrology, Homœopathy, and the kindred delusions of the day. When will the principles of sound education and the element of good common sense so far prevail, that these ancient and modern absurdities will cease to delude so great a portion of the community?

On Pulsatilla. By JOHN C. PETERS, M.D.

(Continued from Vol. XVI., page 410.)

False Vertigo.—Lowenhardt has found it rapidly and certainly useful against this form of disease, which is said to have been first described by Marcus Herz; it is supposed to have its seat in the organs of sight, and is characterized by a feeling of tension in the lids, which commences in the external angle of one or both the eyes, and is attended with an appearance of glittering or glimmering, during which all objects whose rays strike the eye from that side seem to have a very quick, waving motion. Hufeland describes it as if one was looking through moving water, or through an atmosphere which is very much heated and quivering, and through which a number of bright-colored, circular or serpentine objects are in violent motion.

It is a marked peculiarity of this disorder, that there is no accompanying dizziness, no confusion of the mind, no obstruction of thought, no turning around of objects, or fear of falling; all of which serve to distinguish it from vertiginous attacks arising from derangement of the stomach, or of the brain. As a general rule, only one eye is affected at a time. Herz attributes the paroxysms to suppression of the functions of the skin. It yie'ds to a few grains of extract of pulsatilla, although belladonna, digitalis, opium, and common anti-bilious and anti-gastric treatment are of no avail. Lowenhardt gave one-grain doses of the extract every night and morning.

Among the Germans, pulsatilla is used almost exclusively in diseases of the eyes, especially those of a rheumatic or arthritic nature, or arising from the sudden suppression of some accustomed perspiration or eruption. Sobernheim says it is more useful in *Amaurosis paralytica rheumatica* than in any other affection of the eye, and that its

well-deserved great reputation is based upon its usefulness in this disease. Graefe gave one-grain doses of the herb, mixed with a sufficient quantity of the extract, to be conveniently made into pills, from one to seven times per day. He usually gave a course of at least sixty pills, but sometimes preferred table-spoonful doses of an infusion of from one to three drachms of the herb in eight ounces of water. Rust relied upon twenty to sixty drop doses, three times a day, of a solution of one-half drachm of extract of pulsatilla in one-half oz. of wine of antimony. In opacities of the cornea, and also in commencing cataract, Graefe used an infusion of three drachms of the herb in six ounces of water, to which one grain of hydrarg. muriat. corrosiv. was added.

It is well known the celebrated Baron Störck first introduced pulsatilla fully into the regular practice of medicine, more especially in diseases of the eye.

Störck used either seven or fourteen grains of the extract of pulsatilla, rubbed up into a very fine powder in a marble mortar, with one drachm of sugar of milk; of these preparations, he gave from twenty to thirty grains, three times a day.

Case 1.—A man, aged twenty-one, after having had venereal ulcers of the throat, was attacked with syphilitic ophthalmia of both eyes. He could see a little, indistinctly, with the right eye, but the left was entirely blinded by an albugo; the right parotid gland was also enlarged and hard. Mercurials and antimonials were given, without benefit. The weaker powder of pulsatilla was given by Störck, in scruple doses, every night and morning. The remedy caused increased pain in the eyes and lachrymation, followed by salivation and improvement of sight; when the salivation ceased, an offensive diarrhœa occurred. After this treatment had been followed up for five weeks the patient could see quite well with the right eye, and better with the left, as the albugo had commenced to disappear. Then the same doses were given three times a day, followed by a renewal of the pains in the eyes, increased lachrymation, and more profuse and frequent discharges of urine; but, in a few days, the pains in the eyes lessened, and the parotid began to soften, and, at the end of two months, there was a still greater improvement of the sight. The stronger powder was now given, in thirty-grain doses, three times a day, and in four months the patient was quite cured, both of his eye and parotid affection.

Case 2.—A woman, aged twenty-eight, had been blind for several years, with a thick *pannus* over both, but more particularly over the

whole left cornea. The weaker powder was given, in twenty-grain doses, three times a day, and, in fourteen days, the opacity began to grow thinner, and the patient could easily distinguish light from darkness. The stronger powder was now given, in fifteen-grain doses, three times a day, and in six weeks more the right eye was quite restored, and there was every prospect that the left would be so also. The remedy caused violent pains about the eyes, and slight diarrhœa.

CASE 3.—Scar and opacity of the whole left cornea, remaining after the bursting of an abscess, in a girl aged twenty. Many remedies had been used, without benefit, when the weaker powder was given as above; she was cured in two months. Soon after the commencement of the treatment, her *menses, which had been suppressed for a year, returned*, and continued to do so regularly.

CASE 4.—Complete amaurosis of the right eye for twelve years, and of the left eye for a year and a half, in a woman aged thirty-nine; many remedies had, of course, been used in vain. The weaker powder was given as above, followed by the occurrence of very violent, rending, lacerating, boring, and lancinating pains in the eyes, and profuse lachrymation. In the course of three weeks, *her menses, which had been suppressed for several years, returned again freely;* at the end of six weeks she could plainly distinguish light, and her pupils had become movable; at the end of five months, she could see objects with her left eye, could distinguish colors, and was able to walk alone; she also began to see a little with her right eye. Her menses continued to return every three weeks.

CASE 5.—Cataract for seven years, in the left eye of a man, aged sixty-two; his right eye was also very weak, and had gradually become so dim, that he not only could not attend to his work, but could not walk alone in the street. The stronger powder was given, in thirty-grain doses, three times a day, and, in twelve days, he could work a little with the right eye, and also distinguish candlelight with the left.

The equally celebrated Kopp cured a case of erethismus oculorum, or morbid sensibility of the retina, with ten-drop doses of the strong tincture, three times a day; no aggravation or other unpleasant effects were noticed. Also severe pains in the eye, in another case, with the same doses. This experience would encourage us to use the remedy in some severe eye affections, and it is a question whether smaller doses would effect equally good cures.

It will be noticed that Störck frequently alludes to aggravations, supposed to have been caused by pulsatilla, when used against some forms of disease of the eye; this was a favorite notion with this dis-

tinguished physician, and he frequently refers to them while treating of other remedies: thus, in speaking of aconite, he says it is apt to cause pains in the bones and joints, which disappear after a more or less profuse perspiration sets in, accompanied by a somewhat copious flow of dark urine. It is probable that Hahnemann adopted many of Störck's views, especially those about aggravations, and the preparation of remedies by trituration with sugar of milk.

Pulsatilla is supposed to act upon many of the *mucous* membranes like senega, tolu, iodide of potassium, cubebs, and other remedies. According to Stillé, Wendt, Chelius, V. Ammon, and other German writers, attribute to senega an influence over scrofulous inflammations of the conjunctiva and cornea, including those which involve a rheumatic or gouty element. Hartshorne and Chapman, of Philadelphia, regarded senega as one of the most active, certain, and valuable of emmenagogues. It is saying but little when we assume that pulsatilla is far more efficient in both these respects.

In addition, pulsatilla is supposed to exert a specific action upon the mucous membranes of the ear, stomach, and bowels, bladder, urethra, and vagina.

Cases of recovery from disease of the ear like the following are not uncommon. A lad, aged 16, from injury of the ear and taking cold, was attacked eighteen months ago with pain, soreness, and bleeding from the right ear, followed by discharge in a few days; the pain was so severe that he slept but little at night for a month or two; the paroxysms of pain lasted for an hour or more, followed by an intermission of fifteen or twenty minutes; the ear discharged profusely of blood and matter for two or three days, about every two weeks, followed by a scanty discharge for some time, succeeded by soreness, redness and tenderness over the mastoid process. He gradually lost his hearing in the right ear, and three months subsequently in the left ear, although the latter never discharged. Both ears had been syringed carefully and repeatedly by his former physician, and blisters, which he roughly computed at about 150 in number, had been applied behind both ears, without improvement When he came under my care, five and finally ten drop doses of tincture of pulsatilla were given twice a day, and a solution of one drachm of tinct. pulsatilla in seven drachms of glycerine was freely dropped into both ears, night and morning. Improvement commenced quickly, and in three months there was an entire restoration of hearing in both ears, and all tendency to paroxysms of pain and discharge had ceased.

The recovery remained permanent eight months afterwards, at last report.

As regards its action upon the bronchial mucous membrane, J. de Ramm has found it more useful in whooping-cough than belladonna or opium; and Lobenstein Lobel claims to have had the same experience, although he gave it in combination with valerian and fennel. De Ramm used it simply in doses of $\frac{1}{4}$ or $\frac{1}{2}$ grain of the extract, 3 or 4 times a day, for small children, and from $\frac{1}{2}$ to 1 grain for those about 5 years of age; to older patients he gave $1\frac{1}{2}$ or 2 grain doses. It has repeatedly happened to me to remove tedious, loose coughs, with much rattling of mucus, but comparatively little expectoration with this remedy; I have generally used from 1 to 2 drachms of the tincture in a tumbler of water, given in 1 or 2 table-spoonful doses. If, in addition, there is suppression of the menses from taking cold, both affections will often pass away under the use of pulsatilla. Even when there is a tendency to chills, fever, and perspiration, pulsatilla will often avail, although small doses of aconite, in alternation or combination with it, sometimes prove more efficacious.

Full doses of pulsatilla or dulcamara, with or without the aid of aconite, will often relieve severe catarrhal affections of the eyes, nose, and throat, such as severe attacks of influenza, &c.

Epithelial Gastric Catarrh is often associated with biliousness, and generally mistaken for it; it is characterized by a thick whitish or yellowish coat upon the tongue, an incapacity of the stomach to digest its contents, and an irritability of the viscus, which tends to reject by vomiting these undigested substances. At the same time, although the bile may be secreted in its usual quantity only, it is often forced up into the stomach by the effort of retching, and much of it is thrown out with the rejected food and mucus, or else passing downward, and little or none of it being absorbed by the intestinal mucous membrane, it is excreted in the shape of more or less copious bilious stools, intermingled with large quantities of mucus. According to Chambers, the frequency with which bile is vomited, the common occurrence of large quantities of bile in the diarrhœa of gastric catarrh, have acquired for the disorder the popular name of "bilious attack." It is caused, possibly, by an extension of the catarrhal state from the gastric mucous membrane to that of the duodenum, and perhaps even to that of the gall-ducts themselves. It has been conjectured that there is an increased secretion of mucus from the surface of the gall-ducts, which, mixed with the bile, makes the latter somewhat unsuitable for reabsorption, which is further impeded by an excessive secretion of mucus

along the whole length of the small bowels. In addition to other remedies, pulsatilla, dulcamara, and the muriate of ammonia will be found exceedingly useful remedies.

Pulsatilla is consequently a main remedy in *chronic catarrh* or *mucous flux of the stomach.* According to Chambers, the symptons of this disorder seem closely proportioned to the quantity of mucus secreted, and consequently to the extent of membrane involved; where these are slight, the difficulties of digestion often escape the notice of both patient and physician; there may only seem to be a state scarcely distinguishable from general atony and anæmia, viz, a certain want of appetite and deficiency of nutrition, or an incapacity of benefiting by the food taken. But in those cases in which the whole or greater part of the stomach is thickly coated with tenacious mucus, sufficient to interfere with the action of the gastric juice upon the food, then symptoms of a well-marked character manifest themselves: there is a sensation of uneasiness, and sometimes of pain in the epigastrium, coming on mostly at times when the stomach is empty; there may be a craving for food, but no sooner is any taken than it excites a feeling of weight and distention; in other cases, there is a sense of emptiness and sinking in the stomach, which leads the patient to take food, although there may not only be no appetite, but an absolute disgust for all of it. At times, quantities of glairy mucus alone are vomited up; at others, the food, enveloped in mucus, is not interpenetrated by the gastric juice, but takes on acetous fermentation, attended with acid eructations, heartburn, and a painful accumulation of flatus in the stomach, so that the distress resulting is of a spasmodic or distensive character, apparently relieved only by eructations or other discharges of wind. In cases of long duration, there is a dull leucophlegmatic aspect, and a feeling of weakness, with coldness of the extremities, and a small, feeble pulse. The patient is desponding, easily depressed; not absolutely melancholic, but easily disposed to dwell upon the gloomy side of things. It is in this class of cases that *cubebs*, aided or not by bismuth and prepared chalk, is so useful; but pulsatilla and benzoate of ammonia will cure many cases without their aid, especially if the doses are given when the stomach is empty of food.

Pulsatilla is also useful in some eruptions produced by the use of improper food, and is not a useless remedy to prevent attacks of gout, arising from the same cause. It has a continental reputation in some chronic skin diseases, in some rheumatic and arthritic affections, and even in syphilitic bone-pains. It will often render the excessive and routine use of colchicum unnecessary, and when combined with, or given in alternation with it, will render smaller doses more efficacious.

Effect of Chlorine and its Combinations on the Tissues. By Prof. BRYK, of Krakau. (Translated and condensed by C. A. HARTMANN, M.D., Cleveland, Ohio.)

1. *Character of the Crust Formed.*—The parts cauterized with chlorine or any of its combinations appear, at first, of a wax like consistence, but grow hard and decay under the influence of the atmosphere. The several layers of the crust formed by the tissues destroyed are easily separated. Fatty metamorphosis and mummification take place; the blood of the implicated vessels coagulates. The changes produced in morbid growths have been well described by Lambl, (*Virchow's Archiv.*, Bd. 8;) all of them undergo more or less fatty degeneration.

The crust diminishes in size from its borders towards the centre, and gradually changes into a brittle mass, scaling off superficially, while the deeper layers melt under the influence of the pus surrounding them.

Mummification and fatty metamorphosis, although apparently different, agree in the destruction of the elementary cells of the implicated tissues. The predominance of the one or the other depends on the intensity of the cauterization and the value of the caustic.

The color of the scabs depends upon the agent employed: it is white from chloride of zinc and corrosive sublimate; yellowish-white from chloride of platinum or lead; brown from the chlorides of antimony and bromine; yellow, changing to violet, from chloride of gold.

Chlorine and its combinations with alkalies produce a very soft, nearly diffluent crust; the metallic chlorides one of solid consistence.

The thickness of the crust is not less variable according to the combination producing it, the quantity and more or less concentrated state of the same, the duration of the application and the cauterized tissue. Generally, thin scabs follow the application of chlorine and the chlorinated alkalies; sublimate and chloride of platinum form the thickest crusts, from half an inch to an inch thick after application of half a drachm for six or eight hours. One drachm of chloride of zinc requires from 24 to 48 hours for the same effect; a repeated application of it does not result in destruction of the tissues beyond a certain depth. Chloride of antimony is equal to it. One drachm of chloride of iron, applied for twenty-four hours, gives a crust four or five lines in thickness; chloride of bromine, under the same conditions, one from one-fourth to half an inch in depth; chloride of gold, one of hardly two lines. Chloride of lead may remain in contact with the

tissues for several days, without giving rise to more than very superficial incrustation. In a less concentrated state, or in smaller doses, or mixed with some absorbent powder, all these agents have a less marked effect.

A thick epidermis retards the influence of the caustic; a large amount of adipose tissue prevents the same to a considerable extent. The more tissues beneath the point of application, the more superficial the destruction. Morbid growths are comparatively easily incrustated, if not penetrated by too numerous blood-vessels.

The histological alterations already referred to also differ somewhat under different caustics. Chlorine and the alkaline chlorides promote principally the fatty degeneration; in morbid growths this is especially manifest in the cellular elements of pus, which becomes inspissated and interspersed with fatty coagulations. As far as the intensity of the fatty metamorphosis is concerned, the epithelium and certain groups of areolar tissue are affected to an equal degree with pus; the muscles are changed most intensely by chloride of potassium, less so by the chlorides of soda or calcium, or by fluid chlorine. But the last-named penetrates into the tissues to a depth of about three lines, while the chlorides of ammonium and sodium only go to a depth of one or two lines. Very weak solutions of the metallic chlorides have a similar effect as the alkaline compounds; but applied in substance, or in concentrated solution, the same agents induce more or less intense mummification. The most powerful in this regard is corrosive sublimate; next, chloride of platinum; both allowing fatty degeneration only in the deepest layers of the crust. Under the effect of chlorinated antimony or zinc, the two forms of destruction are about equal in extent. The brown-red crust produced by the chloride of iron is mummified in its upper layers, fatty degenerated below; the latter to the greatest extent. The brownish-violet crust following the application of chloride of gold shows only very superficial mummification, while its greater part is fatty. Chloride of bromine causes a dirty-brown, wax-like crust, interspersed with the whitish or gray color of its main parts; the walls of the implicated blood-vessels are readily softened and ruptured, causing exhausting hæmorrhages. When chloride of lead has been employed, hardly any mummification can be demonstrated; no coagulation takes place, and the walls of the blood-vessels suffer no injury.

From these effects, the chlorides named can be arranged in two classes: first, the metallic chlorides, having a prominently mummifying effect; secondly, those inducing more particularly fatty metamor-

phosis, to wit: chlorine, the alkaline chlorides, and weak solutions of the metallic compounds. According to the intensity of the effect, their order would be: corrosive sublimate and chloride of platinum; next, the chlorides of zinc, antimony, and iron; then those of bromine and gold; lead forming the connecting link with the remaining caustics.

2. *Anatomical Changes in the Surrounding Tissues.*—Considerable increase of cellular nuclei in the areolar tissue and capillaries is often evident in six or eight, always in twenty-four hours. About the fourth or fifth day ensues a copious serous exudation from the newly-formed vessels of the granulating layer, washing off the nuclei in the form of pus mixed with fat-globules. By this time, the crust coming off, leaves a sore covered by granulations, which consist of newly-formed vessels and cells. The larger portion of the deeper new cells makes up the defect in areolar tissue. With the decrease of the serous transudation, the most superficial layer of the granulating surface, with some of the degenerated masses, dries into a compact, yellow crust, under which the cells change into epithelium and epidermis. The obstruction of the blood-vessels by coagulation, and the collateral hyperæmia consequent upon the application of the more powerful caustics, are certainly not without modifying influence on this process. The œdema is proportional to the intensity of the surrounding inflammation, the secretion of pus to the permeability of the vessels, and the quantity of the serous transudation.

The firm adhesion of the crust to the subjacent tissues acts as a mechanical influence. The occlusion of the wound and the direct compression prevent any exuberant development of the cellular elements, and favor the production of solid areolar tissue in the lower part of the granulating layer.

Cauterization is always followed by coldness and pain in its neighborhood, least so when the alkaline chlorides are employed. These are also not very apt to produce general functional disturbances. The urine, usually increased in quantity, shows albumen in proportion to the duration of the cauterizing influence; frequently traces of the substance employed, always a diminished amount of urea, chlorides and phosphates, usually also of uric acid, but larger quantities of the urinary pigments. All these symptoms continue as long as the caustic operates, and disappear in a few days after its removal. The metals are thrown out by the kidneys in the form of albuminates, or, perhaps, occasionally as stearates. There is evidently an intense catarrhal inflammation of the kidneys, caused by the elimination of the caustic. Too

frequent application of chlorinated metals may result in protracted and fatal albuminuria.

3. *Chemical Constituents of the Crust.*—A part of it is soluble in water, a part not. The former contains chloride of ammonium, albuminates of antimony and zinc, stearates of the oxides of antimony and zinc; the other free fatty acids, some metallic albuminates, a chlorinated proteineous substance, and some other metallic combination. The more soluble metallic albuminates and saponified metals are mostly resorbed and removed through the kidneys. This explains the mummifying process, but not the fatty degeneration, which seems to be due to the chemical influence of free chlorine. The soluble and chlorinated proteineous substances also owe their existence to the action of chlorine.

4. *Therapeutical Effects of the Caustic Chlorides.*—The escharotic action of particular value for the destruction of morbid growths depends in its success upon the location, extent and character of the morbid formation, as well as on individual conditions. The dose, combination, etc., are to be regulated by these indications.

As antiseptics, the chlorides have been employed a long time, especially against the different forms of gangrene. The chloride of calcium has been mostly used for that purpose. It is an ingredient of Morineau's antiseptic powder. But the metallic chlorides are the most powerful deodorizing agents. The chlorides of zinc, antimony, and mercury have been successfully applied to water-canker; the last-named also to atonic and gangrenous ulcers and hospital gangrene.

The hæmostatic property of the chlorides results from coagulation of the blood in the vessels reached, and formation of insoluble metallic albuminates and stearates; for this reason, that property is confined to the metallic chlorides. Many observers have confirmed the excellent hæmostatic effect of chlorinated iron. The chloride of zinc is a good application for the different forms of nævus angieotasia and fungus hæmatodes. It may be proper, in some cases, to combine these agents with mechanical hæmostatics. Generally, the hæmostatic effect of the metallic chlorides is modified by the size of the blood-vessels, the character of the caustic itself, the duration of its application, and the adhesion of the crust. Untimely removal of the latter is followed by obstinate hæmorrhage.

Of the greatest value is the destroying and colliquefacient influence of the remedies referred to. The degeneration produced by them, in conjunction with the coagulated contents of the capillaries, limits exudation, as well as formation, of pus. Hence, the use of chloride of

soda in ophthalmic blennorrhœa; chlorate of potash in mercurial stomatitis; chloride of zinc in uterine and vaginal blennorrhœa; chlorine solution in variola, and chlorine inhalations in pulmonary catarrh. Hence also the cicatrizing power advantageously employed against slowly-healing fractures with external wounds and old atonic ulcers of the feet. An analogous influence is manifested on the induration and swelling of glandular organs, as well as on morbid formations: corrosive sublimate has been found to destroy pterygium and sarcoma of the gums; chloride of potassium has proved useful against cancroid tumor of the nose; chloride of gold, against induration of the tongue and scrofulous swelling of the sublingual glands.

5. *Disadvantageous Consequences.*—Corrosive sublimate applied to carcinomatous tumors is said to have repeatedly caused death in the midst of violent pains, vomiting and convulsions. Chloride of platinum appears to be scarcely less dangerous. Of the chloride of zinc, there is only one instance on record where its external application caused general indisposition. The other metallic, and all the alkaline chlorides, seem to be free from such effects, except the hyperæmia of the kidneys, already mentioned, and this should certainly not be overlooked.

Dangerous local hæmorrhage may happen from the rupture of larger vessels, in consequence of softening in their walls without coagulation of the contents. For this reason, the injections with chloride of iron, in solution, for aneurism, have been declared impracticable. On the other hand, too extensive obstruction of the blood-vessels around the cauterized parts is not less to be feared. Neighboring organs may be affected so as to cause death, even when the direct result of the cauterization appears satisfactory.

6. *Remarks on Combinations, etc.*—Notwithstanding its toxical influence, corrosive sublimate is of great value as a caustic, in the form of Plenk's solution, Von Graefe's corrosive ointment, etc. Combinations of it with other caustics are objectionable, although Justamond combined it with arsenic; Autenrieth with chloride of antimony and ointment of cantharides. The value of chloride of platinum cannot yet be determined. All the other metallic chlorides (except the almost powerless lead) may be combined with each other, according to their more or less intense effect. Some absorbent or gluing substance—powdered liquorice-root, plaster of Paris, asbestus, etc.—should always be added.

The selection of the caustic depends on the effect desired. Canquoin's combination of the chlorides of zinc and antimony forms a

good escharotic. Landolfi added the chlorides of bromine and gold, without good reason; his paste, however, can be used where a rapid destruction of several layers of tissue, or the suppression of putrid exhalations and mummification of necrotic tissue, is required. Chloride of iron might be substituted for that of gold. A combination of chloride of bromine with some other metallic chloride would answer the same purpose.—*Virchow's Archiv. fuer Pathologische Anatomie, etc.*

Transactions of the Medical Society of the County of Kings.

Vaccination. By A. N. Bell, M.D., Physician to Brooklyn City Hospital; Member of Kings County Medical Society, etc.

The resolution of the Society making it the duty of the Committee on Public Health to "*introduce the subject of Vaccination for discussion*" having devolved upon me, I propose, on behalf of the Committee, to present for the deliberation of the Society the following propositions:

1. *A résumé of the benefits of vaccination;*
2. *How the protective influence of vaccination may be impaired;* and,
3. *What measures are necessary to secure efficient vaccination.*

The facts which I present on these several propositions have been chiefly gleaned from periodical medical literature, and from the published papers produced by the indefatigable labors of the Epidemiological Society, and the General Board of Health, of London.

I. A Resume of the Benefits of Vaccination.

From the year 1798 (the year when the immortal Jenner first announced to the world his great discovery) to the present time, facts have been constantly accumulating to the elucidation of the most universally accepted truth ever demonstrated by the science of medicine, namely, *that vaccination, when properly performed, is protection against small-pox.* The general assent of the medical profession to this truth appears to have been given very soon after its first promulgation. Dr. Copeland states that "the commencement of this century was remarkable for the progress of vaccination. In 1801 upward of six thousand persons had been vaccinated, and the greater part had been tested with small-pox. In 1800, 1801, and 1802, vaccination was introduced into France, Germany, Italy, Spain, and the East Indies. In 1802 Parliament voted Dr. Jenner a reward of

£10,000 for the discovery, and in 1807 the additional sum of £20,000. In 1808 vaccination was taken under the protection of the Government."—*(Dic. Med.)* During the period from 1799 to 1816, preservation from small-pox by vaccination was scarcely called in question. But succeeding this period, cases of small-pox subsequent to vaccination frequently occurred; until, finally, during the continuance of the great epidemics of small-pox which prevailed in Europe from 1819 to 1824, serious doubts began to be entertained whether vaccination had not lost its protective influence. In Marseilles alone, there were 30,000 cases of small-pox; and the number of vaccinated persons who wholly escaped was so small, that observers were obliged to conclude that the protection afforded by vaccination was, at most, only relative. The Jennerian Society accepted this conclusion; but soon after—small-pox continuing to prevail—relative immunity likewise became a question, and the subject was warmly discussed. Dr. Jenner admitted that a single vaccination did not always insure complete protection against small-pox, yet he claimed for it an immunity in most cases. By the opponents of vaccination this explanation was regarded as a mere apology for its failure, and numberless theoretical objections were propounded and urged with arguments of various force against its longer continuance.

It was said to be a *bestial humor*, implanted in the human race, that would inevitably produce new and dreadful diseases; *horns* would grow on the vaccinated, and a brutal fever would excite incongruous impressions on the human brain. Learned divines quoted Scripture, with dark insinuations against "contaminating the form of the Creator with the brute creation." And, as if to perpetuate the prejudices of the willfully blind, it is said that over the remains of Mr. John Birch, surgeon of the time to St. Thomas Hospital, may still be seen in one of the church-yards in Rood Lane, a monument erected by his sister, which commemorates that "The Practice of Cow-poxing, *which first became general in his day, undaunted by the overwhelming influence of power and prejudice, And the voice of nations, he uniformly and until death* (1815) *opposed.*"

At the time of Jenner's death, 1823, the feeling of doubt and skepticism regarding the benefit of his discovery was more prevalent in England than on the continent, yet he was not without honor even in his own country. The assent of the medical profession had been very generally obtained everywhere, and during the progress of the great epidemics of small-pox which continued to prevail for ten years longer, medical men satisfied themselves that the cause was to be

found rather in the neglect, than in the failure of vaccination. And from about the year 1835 to the present time, the testimony in favor of its prophylactic powers has been accepted as conclusive. Nevertheless, there always has been, and there probably always will be, a certain amount of opposition to this, as of other great truths, worked out by the science of medicine. Opposition to vaccination, according to Dr. John Simon—one of the most distinguished writers on the subject—may be divided into three sources:

"1. Hereditary opposition among the descendants of those whose fathers, friends, and teachers were contemporaries of Jenner, and among whom the old allegiance finds here and there a surviving follower of Birch, the surgeon of St. Thomas Hospital.

"2. The operation of personal eccentricities, against the common convictions of mankind. And

"3. Among persons who, for sinister purposes, are always ready to oppose any project, independent of its merits."

But to these may be added a class of opposers, composed of men of limited observation, who are impressed with the sincere conviction that neither vaccination nor inoculation affords that security and protection from small-pox which is generally believed; a conviction impressed on their minds by a concurrence of what may be termed untoward instances within their own narrow sphere. And there is still another, and by no means inconsiderable, class—the votaries and dupes of impostors and superstition. "In the opinion of the ignorant multitude," observes Lord Bacon, "witches and impostors have always held a competition with physicians." Since the time of Lord Bacon the belief in witches has doubtless become much less general, but it may well be doubted whether the same can be said of impostors and their dupes, who are no less active in their competition or less powerful in their influence now, than were the witches and impostors in the days of Lord Bacon.

But it is to be presumed that no member of this Association belongs to either of the above-named classes of opposers to vaccination, or questions the truth of a doctrine now universally accepted. It is an article of our common faith, and we have so long exclusively practiced those incontestable arguments, which have been, in the words of Jenner, "engraved with the point of the lancet," that we laugh at those foolish though potent agents in the community, which influence people to be criminally negligent of the greatest temporal benefit ever conferred on the human race.

The highest medical authorities to which we can refer recommend

"that *all* views and facts objected to vaccination be rigorously inquired into, and that there be published annually a true account of such inquiries, and an elucidation of whatever seems doubtful or contradictory."*

"It is to be observed that the poisons producing all epidemic diseases are subject to variations; sometimes rapid, sometimes very gradual, both as to intensity and to several of the effects they produce; which makes it right to have the evidence of the efficacy of any such protecting power as cow-pox has always shown now for years, subjected to examination from time to time, with the view of ascertaining whether any such modification of its usual power has taken place."†

Recent legislative action on the subject of vaccination, both in England and this country, has unfortunately been of but little, if any, more beneficial, than it was in England in 1808. The only benefit of the Vaccination Act, passed by the English Parliament in 1841, consisted in making it unlawful to continue the practice of inoculation; while, on the other hand, it served to array those who favored the practice of inoculation against both the law and the object of its enactment—namely, to promote vaccination. The object of the act of 1853 was to render vaccination *compulsory*. While this bill was under discussion, the "Small-pox and Vaccination Committee" of the Epidemiological Society made their famous Report to Parliament, on the prevalence and mortality of small-pox in different countries; and on the means taken to guard against its propagation, and to diminish its mortality through vaccination. The conclusions arrived at in the said Report are deduced from the largest and most accurate mass of statistical evidence ever brought to bear upon any question within the scope of medical science. Yet when that Report was made, notwithstanding the overwhelming evidence of its accuracy, there were men in the British Parliament, not unlike some of those to be found in our own legislative assemblies, so opposed to science, and so prejudiced against bills drawn up by medical men for the protection of public health, that the effectiveness of the measure was destroyed by its corruptions.

The Report of the Registrar-General for 1854 pointed out the imperfections of the act of the year before, and sought to have them

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* Prof. Sigmund, of Vienna.

† Prof. Alison, of Edinburgh.

corrected. But the ill-directed influence of erroneous popular belief that "vaccination had introduced no end of diseases into the human body! and that the existence of cow-pox had been a curse to mankind," and similar misrepresentations, postponed all amendments. The act of 1853 continues, but it is an acknowledged failure. This state of things, however, has not discouraged the advocates of sanitary reform. On the contrary, it has stimulated effort, and thereby brought to bear upon the subject of vaccination an amount of statistical information no less convincing to the public than valuable to the medical profession. The nature and the extent of the evidence adduced by the labors of the Epidemiological Society and the General Board of Health of London preclude the necessity of making further researches in the same direction, and leaves to us the easy task of presenting the knowledge which those societies have brought to light.

Dr. John Simon, the physician to the General Board of Health, having been desired by the President of the Board "to lay before him such medical facts and considerations as may assist him (the President) in estimating the hygienic value of vaccination, and the strength of any objections which may have been alleged against its general adoption," propounded the following inquiries as leading topics for investigation:

"Tested by half a century's trial on millions of civilized Europe, what has vaccination achieved? Comparing the small-pox mortality of the last forty or fifty years with that of as many years in the last century, do we find a sensible difference? Has progress been made towards the final result which Jenner anticipated—the annihilation of the most dreadful scourge of the human race?"

In summing up his answer to these questions, Dr. Simon gives the following table, which contains two series of facts side by side; and shows, first, how many persons in each million of the population annually died of small-pox *before* the use of vaccination; and second, how many persons in each million of the population have annually died of small-pox *since* the use of vaccination:

MORTALITY STATISTICS OF SMALL-POX.

Terms of years respecting which particulars are given.	Territory.	*Approximate Average Annual Death-Rate by Small-Pox per Million of living Population.* Before introduction of Vaccination.	After introduction of Vaccinat'n.
1777–1806 and 1807–1850	Austria, Lower	2,484	340
1777–1806 and 1807–1850	" Upper and Salzburg	1,421	501
1777–1806 and 1807–1850	Styria	1,052	446
1777–1806 and 1807–1850	Illyria	518	244
1777–1806 and 1838–1850	Trieste	14,046	182
1777–1803 and 1007–1850	Tyrol and Voralberg	911	170
1777–1806 and 1807–1850	Bohemia	2,174	215
1777–1806 and 1807–1850	Moravia	5,402	255
1777–1806 and 1807–1850	Silesia, (Austrian,)	5,812	198
1777–1806 and 1807–1850	Gallicia	1,194	676
1787–1806 and 1807–1850	Bukswina	3,527	516
1817–1850	Dalmatia	..	86
1817–1850	Lombardy	..	87
1817–1850	Venice	..	70
1831–1850	Military Frontier	..	288
1776–1780 and 1810–1850	Prussia, (Eastern Provinces,)	3,321	556
1780 and 1810–1850	" (Western Provinces,)	2,272	356
1780 and 1816–1850	Posen	1,911	743
1776–1780 and 1810–1850	Brandenburgh	2,181	181
1776–1780 and 1816–1850	Westphalia	2,643	114
1776–1780 and 1816–1850	Rhenish Provinces	908	90
1781–1805 and 1810–1850	Berlin	3,422	876
1776–1780 and 1816–1850	Saxony, (Prussia.)	719	170
1780 and 1810–1850	Pomerania	1,774	130
1810–1850	Silesia, (Prussia,)	..	310
1774–1801 and 1810–1850	Sweden	2,050	158
1751–1800 and 1801–1850	Copenhagen	3,128	286

Dr. Simon adduces confirmatory evidence of the same purport from the records of Dr. Balfour relative to the army and navy. The combined weight of testimony from all sources shows *that, in the proportion as vaccination is general and efficient, so is the exclusion of small-pox from the community, and mortality greatly lessened.*

The Report of the Epidemiological Society demonstrates the same truth by extensive tabular statistics, agreeing with Dr. Simon's. The progress of vaccination in Great Britain and Germany is first compared as to its influence on mortality generally; and secondly, it is shown, by comparing the statistics of vaccination from various German States with the statistics from different districts in Great Britain and Ireland, that wherever vaccination is most perfectly carried out, small-pox is least mortal.

In England, out of every 1,000 deaths in the half-century from 1750 to 1800, (before vaccination,) there were of small-pox 96

Out of every 1,000 deaths in the half-century from 1800 to 1850, there were of small-pox 35

In various German States, in the last half-century before the practice of vaccination, out of every 1,000 deaths, there occurred from small-pox.....66.5

After vaccination there occurred from small-pox, out of every 1,000 deaths, only 7.26

In various countries and communities where vaccination is voluntary, and frequently neglected or carelessly performed, the deaths from all causes being 1,000, the deaths from small-pox range from 18 to 60. In the United States, there are no general statistics on this subject, of a reliable character. According to the mortality statistics of the United States Census for the year 1850, there were in that year 2,352 deaths from small-pox. "Yet," remarks the compiler of that report, "the returns of the Marshals have only to be examined with care, and deductions made from them, to satisfy the most careless observer that in the Union at large at least one-fourth of the whole number of deaths have not been reported at all." This would appear to be especially the case as regards small-pox. For in the City of New York alone, there has been an annual average of more than 400 deaths from small-pox for the last ten years. The proportion of deaths from small-pox for five years, from 1856 to 1860 inclusive, to the population in 1860, in our large cities, was as follows:

Providence,	one death in every	2,815	of the	population.
Philadelphia,	"	"	1,120	"	"
Brooklyn,	"	"	685	"	"
Baltimore,	"	"	522	"	"
New York,	"	"	478	"	"
Boston,	"	"	435	"	"

Excepting Providence and Philadelphia, the same data give about 20 deaths from small-pox for every 1,000 deaths from all causes. During the current year, however, especially as regards Philadelphia, the ratio is considerably larger. And it is not a little remarkable that, according to our mortality statistics of small-pox, *more than half are of children under ten years of age;* plainly showing the criminal neglect of vaccination in early infancy. In communities where vaccination is more or less compulsory, and performed by competent persons, the deaths from all causes being 1,000, the deaths from small-pox range from *two* to *eight*. Upon the whole, it appears that the ratio of mortality from small-pox amongst vaccinated persons over all is 5¼ per cent.; but when vaccination is known to have been *well performed*, as shown by good cicatrices, the mortality is reduced to less than *one-half of one per cent.*

According to the well-kept mortality statistics of Sweden, the *annual* small-pox death-rate in that country during the period of 1841–50 averaged less than the *weekly* death-rate from small-pox and measles during the period from 1755–75. This important fact introduces us to an indirect benefit of vaccination, which has until recently been overlooked — namely, the beneficial influence of vaccination against other diseases.

Drs. Greenhow and Farr, under the auspices of the General Board of Health of London, have shown that, with the decline of small-pox consequent on vaccination, the general death-rate has greatly diminished from all causes; and that, too, notwithstanding a severe and fatal epidemic of influenza and two epidemics of cholera. And under this diminution, it is especially notable that the two classes of disease usually considered the most fatal, namely, scrofulous and typhoidal affections, have diminished in a remarkable degree.

The general death-rate per 10,000 of living population during the period 1846–55 was 25 per cent. less than the decennial period 1746–55; and 40 per cent. less than the decennial period 1681–90: showing a successive decline since the remoter period from 421 to 355; and since the more recent period, from 355 to 249.

According to Dr. Farr's statistics, the average annual death-rates in London from all causes and all ages, per 10,000 living, were —

During the period	1771–80	500
" "	1801–10	292
" "	1831–35 {small-pox prevailed,}	320
" "	1840–54	248 9/10

The average annual death-rates in Sweden, from all causes and all ages, per 10,000 living, were—

During the period	1776–95	268
" "	1821–40	233
" "	1841–50	205

In McCulloch's Descriptive and Statistical Account of the British Empire, Dr. Farr has shown that fever has progressively subsided since 1771, (at first under the influence of inoculation;) "and that the *combined mortality of small-pox, measles, and scarlatina is now only half as great as the mortality formerly occasioned by small-pox alone.*" And according to the researches of Dr. Greenhow, previous to the practice of vaccination, the death-rate from scrofulous diseases was five times greater than it is at the present time; and the present death-rate of pulmonary consumption, great as it is, is seven per cent. lower than it was previous to the discovery of Jenner.

It thus appears that the existence of small-pox tends to promote an influence favorable to the development of other diseases—and especially so as regards scrofulous affections, including phthisis, and the worst form of fevers; and that whatever prevents the existence of small-pox, indirectly thwarts those conditions which are favorable to the rise and spread of other diseases.

Such are the protective powers, the benefits, of vaccination. The importance of a careful consideration of these conditions it is impossible to overestimate. A proper appreciation of them can lead to nothing less than their universal application in all civilized communities. But notwithstanding the signal benefits of vaccination, as now illustrated, my essay would be incomplete in this relation if I did not notice the opposing influences. Not many years ago, an artillery officer and distinguished mathematician of France, M. Hector Carnot, advanced the opinion that the mortality of small-pox, which had been removed by vaccination, had fallen upon other diseases, especially measles and scarlatina. This opinion, unfortunately, was espoused by Dr. Watt, a somewhat distinguished physician of Glasgow, who elaborated it into the "theory of displacement," which still has its votaries, though, as already shown, abundantly disproved by incontrovertible statistics. It is the well-known practice of quacks, however, to defame the science of medicine, by citing the errors of medical men, regardless of the correction made by others taught in the same careful school. Occasional misjudgments and erroneous conclusions of physicians are quoted, as if others were less competent to give an opinion on that account. There is, indeed, nothing perfect in the science of medicine, and its followers may often be ignorant; but the very progress which scientific medical men have made as a body, is a continued rebuke and correction of ignorance, whether it occur among themselves or among their traducers. Sir Humphrey Davy is said to have expressed the opinion that gas-lighting was impracticable on a large scale. Ever since the converse of this opinion has been realized, speculators have used Davy's mistake as a means of tempting moneyed men into companies, or into the adoption of mere fancies; as if an argument were derivable from that in favor of an object to be commended! The same is true in regard to the truths of medical science, and the displacement theory of Dr. Watt is a case in point. Yet quacks, and those who are influenced by them, use it for a double purpose—as authority for opposing vaccination, and as a basis for the absurd statement—in spite of statistics to the contrary

—that the viability of the human race has not increased under the auspices of medical science.

II. We now come to the second topic for investigation, namely: IN WHAT MANNER MAY THE PROTECTIVE INFLUENCE OF VACCINATION BE IMPAIRED?

The first question which arrests attention under this head is the popular belief "*that the protective power of vaccination becomes gradually weaker, and at length apparently dies out in the individual.*" Until about twenty years ago this was the common belief of physicians; but of late years susceptibility to small-pox, after vaccination, has received so many explanations, that it may be doubted whether the majority of medical men at the present time would endorse it. Certain it is, however, that *lapse of time* is a powerful, if not an exclusive, cause of recurring susceptibility to small-pox, subsequent to vaccination. At any rate, it may be safely stated that in proportion to the length of time that has elapsed since vaccination, is the individual susceptible to revaccination, and, *à fortiori*, to small-pox. "Generally, it may be stated," writes Dr. Simon, "that persons who had been vaccinated ten, fifteen, or twenty years, and who during the interval had perhaps repeatedly resisted small-pox, would, at length, in a certain proportion of their number, yield to the infection. This had most frequently happened during times when small-pox was severely epidemic among the unvaccinated; and the first notice of the fact meant that then, for the first time, *large masses of persons*, with vaccination of many years' standing, were exposed to the test of a strong epidemic influence, and that under this ordeal it became evident that for *some* vaccinated persons, the insusceptibility conferred by cow-pox was *not of life-long duration.*"

Dr. Marson, of the London Small-Pox Hospital, states that "But few patients under ten years of age have been received with small-pox after vaccination. After ten years the numbers begin to increase considerably, and the largest admitted are for the decennial period from the age of fifteen to twenty-five; and although progressively diminishing, they continued rather large up to thirty; and from thirty to thirty-five, they are nearly the same as from ten to fifteen; but as, in the unprotected at this period of life, the mortality is doubled: showing the cause to be, probably, as much, or more, dependent on age and its concomitants, than on other circumstances. In still further advanced life, the rate of mortality will be seen to increase also, as in the unprotected state; but, that this tendency may be in a considerable degree counteracted, there is but little doubt, by giving

more attention than has hitherto generally been given to the perfection of the process of vaccination."

And again, in reference to *re*vaccination, the same writer observes: "Probably it does not afford the same amount of protection as the first vaccination, well performed, does. The great object to be aimed at is to vaccinate *well* in infancy; this should be looked upon as the sheet-anchor; and therefore a careless vaccination should be deprecated at all times, practiced under the belief that if it fails to take effect properly it will be of no consequence, as the operation can be repeated. By such proceeding, the vaccination often takes effect *badly*, and *will never afterwards take effect properly;* and yet the individual may take small-pox severely."

The propriety of revaccination seems first to have become manifest during the progress of the great epidemic of small-pox in Marseilles, already referred to. It was then observed that small-pox occurred in about one-seventh of all those who had been before vaccinated; while it occurred in only one sixty-ninth of those who had before had small-pox. Upon this discovery, revaccination was extensively practiced, and chiefly instrumental in eradicating the epidemic. In the army of Wyrtemberg, Dr. Heim has collected the statistics of 40,000 cases of revaccination. Of this number, one-half reproduced perfect vaccine vesicles. The individuals in this category had been vaccinated twenty years and upward before. Lymph collected from these cases was of good quality, capable of transmitting immunity to other persons. 5,000 of the other cases had been vaccinated within a shorter period of time; in these the vaccine vesicles were partially reproduced, and they were regarded as having been partially susceptible to small-pox. The remaining 15,000 were of more recent vaccinations, and upon these revaccination had no effect; they were considered as being exempt from small-pox by the continued influence of a first vaccination.

The beneficial effect of revaccinating the army of Wyrtemberg was immediately apparent, in the diminution of small-pox. Subsequently, the Governments of Prussia, Bavaria, and the Duchess of Baden, ordered the revaccination of the masses, for the arrest of small-pox. The measure was effectual.

The most recent reliable statistics of revaccination are of the Prussian Army in 1860. "During the year 1860, 69,096 soldiers were either vaccinated or revaccinated. Of this number, 57,325 exhibited cicatrices from former vaccinations, and 7,420 distinct cicatrices, while 4,151 showed no marks at all. The vaccination went through its regular course in 44,193 cases, was irregular in 8,256, and was with-

out result in 16,047. These last vaccinations, again, gave 5,577 examples of success, and 11,650 failures. During the year, there occurred among the above soldiers who were successfully vaccinated, and others who had been so in former years, six cases of chicken-pox, and one of varioloid, but no case of small-pox was met with. Thus, during the year 1860, out of 69,096 vaccinations, 49,777 proved successful—*i. e.*, 72 per cent. In the entire army there occurred 44 cases of pock during the year 1860, viz.: 17 chicken-pox, 23 varioloid, and 4 of small-pox. Of these, 3 of the cases of chicken-pox, 14 of varioloid, and 4 of small-pox, occurred in persons who had not been vaccinated; 8 of chicken-pox, 8 of varioloid, and 1 of small-pox, occurred in those who had been revaccinated without effect; and the remaining 7, as stated above, occurred in those who had been revaccinated with success."*

In this country revaccination has received but little attention. Two occasions, however, of its practice on a comparatively large scale have come to my notice, and both of them are eminently illustrative of its utility. The first of the occasions to which I refer occurred some twenty-five years ago, on board a United States frigate, under the direction of the late Dr. Samuel Jackson, Surgeon of the U. S. Navy. Among a crew of about five hundred persons, there had been several cases of small-pox, placing the ship in quarantine at a foreign port. Good lymph being at hand, the whole ship's company were vaccinated, and the results carefully noted. One in six of the entire crew reproduced a more or less perfect vesicle; they had all been vaccinated before, and many of them within a short period. Those on whom no vaccine vesicle could be produced were found to be equally insusceptible to small-pox, which wholly ceased from the time the revaccinations took effect. The other instance to which I refer has occurred quite recently, and for its elucidation we are indebted to Dr. J. P. Loines, of the Eastern Dispensary of New York. Some weeks ago, Dr. Loines was called upon to furnish lymph to vaccinate about 7,000 volunteers, then encamped at Elmira. The officer in command of this division has since written to Dr. Loines that his lymph could not have been good, as only about one in four *took*. They had probably nearly all been vaccinated before. This experience of Dr. Loines, though not instituted for the purpose of putting a stop to an epidemic of small-pox, is nevertheless valuable in showing the liability of our soldiery to that dreadful disease, and amply sufficient to show the neces-

* *Med. Times and Gazette*, from *Preuss. Med. Zeitung*, 1861.

sity of revaccination for the armies of America. Indeed, the statistics establishing the benefits of revaccination everywhere that it has been tried, all go to show that it is only second in importance to a first vaccination.

In connection with the topic of revaccination, an important question suggests itself as to the *quality* of the lymph. Is the lymph resulting from revaccinations safe to use for the purposes of vaccinating or revaccinating others? "I have known," says one writer, in reply to a question propounded by the Board of Health," matter taken from a revaccinated subject (having formerly had the regular cow-pock) cause an irregular and unpleasant, troublesome form of cutaneous eruption. Nor would I, under any circumstances, use such matter; as my experience tells me that (as a rule) a person, having once had regular cow-pock, is not susceptible of the genuine disease again. But, although you use good lymph, you get a spurious pustule, rising in three or four days, instead of eight or ten, putting on a different appearance, itching much, often causing inflammation of the absorbent glands and vessels, and much constitutional disturbance; in fact, acting as a morbid poison. Consequently, I object to revaccination." More than twenty years ago, the same objections were not only urged against the use of lymph from revaccinations, but against the use of lymph taken from adults under any circumstances, on account of the danger of transmitting other poisons. Syphilis, gonorrhœa, itch, and the like, attracted special attention, and became the subject of experimental investigation. Drs. Mead and Mosely, after much investigation, came to the conclusion that it was "more material into what kind of body the venom be infused, than out of whom it is taken." But, that nothing might be lacking in the extent of his researches, Dr. Simon widened the inquiry, and called for the opinion of the profession on the general question—"Have you any reason to believe or suspect (*a*) that lymph from a true Jennerian vesicle has ever been a vehicle of syphilitic, scrofulous, or other constitutional infection, to the vaccinated person; (*b*) or that unintentional inoculation with some other disease, instead of the proposed vaccination, has occurred in the hands of a duly-educated medical practitioner?" There were numerous replies to this question, but the opinions of Hebra were so logically and lucidly stated, that they were accepted as conclusive. "This widely-grasping question," writes Hebra, "requires several separate answers, because queries are made—

1. "*Whether the lymph of a vaccine vesicle may, besides its peculiar virus, contain another infectious principle*—e. g., *that of syphilis?*

2. "*Whether constitutional non-infecting diseases, as, for instance, scrofula, may be transmitted by the inoculation of cow-pox matter?*

3. "*Whether a vaccine vesicle possesses such characters that it may easily be distinguished from other similar vesicles, blebs, or pustules?*"

(I.) "The transmissible infectious principles which have hitherto been recognized, by means of inoculation, are, the syphilitic virus contained in the pus of chancre; and the virus contained in the cow-pox vesicle, and the small-pox pustule. The question, therefore, simply is, whether these morbid poisons have ever been mixed? Whether inoculations have ever taken place with such a mixture? And what results were obtained by such an operation? It is well known that compendious answers have for some time past been offered to these questions, chiefly the result of Sigmund's experiments. These answers agree in the following respects:

"Inoculation with secretions of this kind—viz., containing, as it were, several special poisons—either produced no effect at all, or only generated a chancre, by inoculating a mixture of pus from chancre and vaccine lymph; and only cow-pox, by inoculating a combination of vaccine lymph and blennorrhagic matter. Hence one morbid state only was produced—either cow-pox or syphilis; the latter circumstance being a proof that both poisons are not *simultaneously* transmissible. This opinion is supported by the experience of Heim, Ricord, Bousquet, Taupin, Landoury, Friedenger, and others.

(II.) "It is maintained in many quarters that the blood of persons suffering from secondary syphilis may serve as a vehicle to the infectious principle; but were even this theory found correct, it would have no prejudicial effect upon the practice of vaccination, because we know from experiments made for the purpose, (Heim,) and from accidental inoculation, that regardless of the quality of vaccine lymph, the latter may be inoculated from syphilitic upon sound individuals; and on the other hand, from sound subjects upon such as are under the influence of systematic syphilis, without propagating syphilis along with the cow-pox.

"What has here been proved of syphilis must, *à fortiori*, hold good as regards other constitutional morbid states, as direct inoculation with secretions peculiar to these diseases have always yielded a negative result.

"But although it is abundantly proved that scrofula-tubercular affections, rickets, cancer, and other blood diseases, cannot be transmitted by means of their own secretions or along with vaccine lymph, we should, nevertheless, if possible, avoid vaccinating diseased persons,

because experience has taught us, as regards adults and children, that the phenomena of vaccination may awake—*i. e.*, render worse—dormant affections, and that, moreover, the cow-pox vesicle easily degenerates upon such individuals. These latter vesicles are, nevertheless, adapted to further propagation, even when they take an imperfect development; because a positive result, a regular development of the vesicle, and sufficient protection against small-pox, have been observed in cases where vaccine lymph has been transferred from weekly, scrofulous, and rickety subjects, upon perfectly sound individuals.

(III.) "Every morbid appearance on the cutaneous envelope has its own peculiar characters by which it may be distinguished from other similar phenomena; the vaccine vesicle presents, in like manner, sufficiently striking peculiarities as to form, size, number, locality, and particularly as regards its course, to enable the observer easily to establish a distinction between the same and other vesicular, bullar, or pustular eruptions."

Notwithstanding the clearness of the above conclusions by Hebra, Dr. A. Viennois, of Paris, has recently published a paper in the *Archives of Medicine* on the Transmission of Syphilis by Vaccination, illustrated by numerous cases of syphilis communicated simultaneously with vaccine lymph. The conditions of this transmissibility he believes to be the taking of blood with the lymph from a person affected with constitutional syphilis. And such matter, Viennois writes, will communicate *both* diseases; the vaccine vesicle appearing first. But after the usual period of incubation, the syphilitic tubercle also appears on the vaccinated part, and is soon after followed by secondary symptoms.

Another alleged cause of deterioration or irregular action of vaccine virus, is *its passage through numerous human bodies;* in other words, *vaccine lymph is weakened by the succession of subjects through whom it has been transmitted since its direct inoculation from the cow.* This has long been a question of serious consideration. Just previous to the Parliamentary Act of 1853, this question was taken up by the National Vaccine Establishment of England. And in the report of that institution for the year 1854, it is stated that "*Vaccine lymph does not lose any of its prophylactic power by continued transit through successive subjects.*" This statement was for a time accepted as final. But the subsequent researches of Simon have at least thrown much doubt upon this statement, if they have not, indeed, wholly controverted it. After quoting numerous investigators to the same purpose, Dr. Simon states, that "The lymph when taken from the cow seems

to show an amount of infective power which is not usual in lymph of long descent. The former *takes*, as the phrase is, in persons with whom the latter has failed; often, for instance, in revaccination. It excites local changes of an intenser kind, so active, indeed, as to render caution necessary in its use. The vesicle produced by it runs a full course, compared with which, the progress of common vaccine vesicles seems unduly rapid, and their termination premature. Also it renders more certain, and apparently more characteristic, that slight *febrile disturbance which is proper to the action of cow-pox on the human system.* These arguments of Dr. Simon have not been as generally accepted by the medical profession as their weight would seem to warrant. Other causes of deterioration have been alleged and invented as being amply sufficient for manifest enfeeblement. Carelessness in the operation, by the use of foul or blunt instruments, thus producing irritating wounds or otherwise modifying the specific influence, or the want of care in selecting and preserving the lymph, are by most persons deemed to be the only faults. While some there are who have taken just the opposite ground to Dr. Simon, and claim that vaccine matter undergoes progressive development to perfect potency by carefully selecting subjects for its transmission. Unquestionably the manner of performing the operation, bad selection and the use of matter not well preserved, are powerfully influencing causes, yet the weight of testimony—where all these influences have been met—appears to be *decidedly in favor of a more frequent resort to the cow.*

Dr. Marson, of the London Small-Pox Hospital, concludes that, among vaccinated persons infected with small-pox, the danger of the disease is determinable by the unskillfulness of the operator, or the imperfection of the vaccination as shown by the cicatrix. A good cicatrix he describes as "distinct, foveated, dotted or indented, in some instances radiated, and having a well-defined edge."

The little pits, dots, or radiated lines, are the remains of the minute cells, which are necessary to a genuine vaccine vesicle; therefore, an indistinct, smooth cicatrix with an ill-defined edge, is imperfect and unreliable, no matter what kind of lymph may have been used in its production. There is, however, another kind of imperfection, sometimes followed by a good cicatrix, namely: an *absence* of *constitutional disturbance* during the course of the disease.

Specific febrile symptoms appear to be quite as necessary to effectual vaccination as a well-formed vesicle. The national statistics of revaccination in the armies of Russia and Prussia show that nearly one-third of all who are revaccinated "give again exactly such local phenom-

ena as arise in children when vaccinated for the first time; and it is also stated by Dr. Thiele, referring to the revaccination of Russian soldiers, that perfect vaccine vesicles would arise just as often on persons who once had small-pox, as on persons who had once been vaccinated." This evidence bears directly upon the necessity of specific fever, and plainly shows that there are two kinds of susceptibility, both as regards small-pox and vaccination: a local and a general susceptibility. Very few persons, indeed, if any, are insusceptible to these diseases; and persons who have been once the subject of one of them, rarely again suffer from the early recurrence of the same or the other, constitutionally, although the local vesicles may be again reproduced.

The influence of idiosyncrasy and hereditary predisposition are, it has been stated, sometimes adverse to the susceptibility to small-pox, and per consequence, to vaccination, which, it is alleged, in such cases cannot be made to take. Such cases are not generally supported by good evidence. There are a number of cases on record of persons in whom vaccination was not made to take, who subsequently died of small-pox. It is plain, therefore, that we can never be justified in concluding that a person is insusceptible to small-pox, or incapable of being vaccinated, until at least all other modifying conditions are certainly disposed of. Vaccination is a matter of too much importance to be lightly treated in any case.

The operation of vaccination, and the various instruments which have been devised for its performance, are so familiar to all, that a description would be superfluous. The operation essentially consists in exposing the virus to the absorbent vessels. This should be done with as little irritation as possible, and so as not to cause a flow of blood, lest the virus be carried off. The disease, too, is so well described in the text-books as to need no elaboration at our hands. The proper time at which lymph should be taken so as to obtain it in the most efficient state for propagating the disease, and the manner of preserving it, are also important considerations. The facts bearing on these questions go to show that the younger the lymph is, the greater is its intensity, and all parties condemn the use of lymph taken on or after the tenth day. The lymph of a fifth-day vesicle, when it can be obtained, it has been stated never fails. But there is danger of irritating the vesicle overmuch, if tampered with too early. The secretion is most abundant on the eighth day, and if taken at this time it is generally effectual, while there is less risk of irritating the vesicle. Irritable sores are also sometimes produced by draining the vesicle too much. Hence some persons hold that the vesicle

should never be meddled with; that the scab, only, should be used. There is, after all, an unaccountable difference in the intensity of lymph taken from different subjects, whatever the precautions; but, as a general rule, infantile lymph is more to be depended upon than the lymph taken from adults. For the preservation of lymph many ways have been devised. In Germany, some importance is attached to preserving it on ivory-points, but there is no reason to believe that this precaution is in any respect better than the common practice in this country of collecting it on quills. In this latter form Dr. Loines —who has probably had more experience on this subject than any one in the United States—informs me that he finds no difficulty in preserving it in well-filled and tightly-stopped bottles, for a period of time varying from four to six months; being careful to keep it in a temperature not above fifty degrees. It will keep about equally long in capillary tubes, or between plates of glass, with the edges well sealed. It may be preserved for a like period of time in the scab, covered with foil or packed in wax. Some writers contend that this last form is the most certain of all, if it has to be subjected to the temperature of tropical climates. It has recently been stated that the virtues of the scab can be preserved for a long time dissolved in glycerine. Dr. Loines informs me that he has tried six specimens thus prepared, opened at different intervals—from one month onward—they all failed. In spite of every precaution, vaccine virus is frequently uncertain; and the causes of its frequent failure are beyond any present known means of investigation. However effectually heat and air are excluded, there nevertheless appears to be an inherent quality of decay which defies all of our efforts, and holds out inducements for continued investigation.

That vaccination is, *when properly performed*, the most potent and beneficent prophylactic of disease ever discovered, no one possessed of even the most rudimentary knowledge of medical science will pretend to doubt. But there are many points in its pathology yet open to the devotees of scientific research; and the more time and thought we devote to the subject, the more important does it appear. The liability of man to one of the most loathsome diseases that was ever visited upon the human race demands the constant vigilance of the medical profession; and immeasurable be the guilt of any community, if it fail to secure the complete and efficient vaccination of all its members.

3. Of the measures necessary to secure efficient vaccination.

The progress of State medicine in some European countries—already referred to—encourages us to hope that ere long sanitary science may become an element in American legislation. Few persons, however, who have not tried it, can appreciate the obstacles, both in and out of the medical profession, to the advocates of sanitary measures. Unfortunately, among ourselves, there are some who take no further interest in such matters than to oppose, tacitly or otherwise, all such efforts. They thus become the co-operators of incompetent persons, and unite their influence with those who would recognize no such thing as a bad vaccination, or who would, in a contract for its performance, place it on a level with the supplies for the alms-house, and so bestow the job upon the lowest bidder. Such influences as these tend, in the first place, to delay legislation for the protection of public health; and in the next place, so to embarrass it as to render it ineffectual when it is obtained. So far as legislation has been tried in this country, it has met with the same fate as that already referred to in England.

Dr. Snow, of Providence, writes that "The laws of this State" (Rhode Island) "give all necessary powers to boards of health for the prevention of contagion when small-pox exists, by removing the sick to the hospitals; by placing a guard around infected houses, and other similar provisions; but they have no provision to prevent the disease by vaccination, except that town councils are required to offer free vaccination to all who *choose* to avail themselves of it, *as often as once in five years.* In Providence, free vaccination is provided every Saturday during the year; and a city ordinance also provides that no child shall enter the public schools without a certificate of successful vaccination.

"Such are the laws in relation to the subject in Providence, and it will be readily seen that they must fail to accomplish the object desired, viz, the early vaccination of every individual in the community. A large number of persons, from ignorance of its importance, or from criminal neglect of their duty, will constantly fail to avail themselves of the free vaccination which is offered. It is only when small-pox appears that they begin to realize the importance of vaccination, and give attention to it.

"The provision for vaccination, before entering the public schools, is of very great benefit, and many children are vaccinated for the first time, when they enter the schools, at the age of five years. But some children do not attend these schools; and as about seventeen

hundred children are born in the city every year, if none were vaccinated until the age of five years, we should constantly have several thousand children in the city who were not protected from small-pox."

In Massachusetts there is a similar, though more stringent law, than that of Rhode Island, yet it is lacking in all the provisions requisite to an effective vaccination, inasmuch as it takes no cognizance of competency for its effectual performance.

In the City of Philadelphia there is an ordinance of similar import to the laws of Rhode Island and Massachusetts. "Believing it to be only one step forward," writes Dr. Jewell, "I have remarked—and every intelligent man will surely endorse the sentiment—that a still higher standard, embracing more adequate provision, is demanded, before a perfect report of the successful state of vaccination in our city can be exhibited. The ordinance now in force is purely benevolent in character, and strictly voluntary in its import. It offers gratuitous vaccination to every individual, and provides an easy method to secure the gift. Unfortunately, however, what with apathy and indifference with some, and prejudice on the part of others, this inestimable sanitary blessing is too often refused to render it an entire security against the introduction of small-pox."

Such is the present inefficient state of legislation on the subject of vaccination. Let it not be supposed, however, that in finding fault with this wanted progress, I mean to condemn what has been attempted. Far from it. They are steps in the right direction, and it is the duty of every member of this Society, aye, every man who has any regard for human health, to help along the good work until such measures are instituted as will secure the universal application of vaccination—the greatest of all sanitary measures—to every person in the community.

To suggest such measures as are necessary for this purpose in the absence of a fixed system of laws for the protection of public health in general, is to take for granted that such laws will be forthcoming. And, from indications that are now manifest, there is reason to believe that the time is not far distant when the friends of sanitary reform in New York and Brooklyn will be assisted to wipe out the disgrace which now attaches to these cities, not only for a continued epidemic of small-pox, but for otherwise being among the most unhealthy cities of the world.

We have a State Medical Society which most opportunely meets at the capital of the State simultaneously with the State Legislature. If that Society could be induced to appoint a committee selected with

reference to different localities, whose duty it should be to promote sanitary reform in the State, the effect would doubtless greatly assist the friends of sanitary reform where the reform is most needed, as well as do much towards obtaining necessary sanitary laws for the whole State. First among these *necessary* laws are such measures as will secure effectual vaccination. In the plans to effect this object:

1. All schools of learning, public and private, all benevolent, penal, and other institutions, should be invoked, as part of the machinery, to carry out the purpose to be accomplished.

2. All medical institutions should take special pains to teach the practice and pathology of vaccination, and every candidate for graduation should be required to produce satisfactory evidence of a thorough knowledge of vaccinia before receiving his diploma or license.

3. A general Vaccinating Board should be constituted under the auspices of the General Board of Health, which Board should be responsible for an efficient organization to secure universal and perfect vaccination and revaccination as often as required.

4. Legally qualified medical men only should be permitted to vaccinate, and a sufficient number of these should be appointed wherever required. Registers should be kept by all who vaccinate, subject to inspection by members of the Board.

5. The Health Officer of every community should also be an Inspector of Vaccination, and upon him should devolve the duty of giving certificates of vaccination, and *not* the vaccinators. It should also be the duty of the Health Officer, with competent aid under the auspices of the General Vaccinating Board, to inspect the community at stated periods.

6. No person should be admitted to membership in any school, public or private, week-day or Sunday, or into any asylum or institution whatever, without a certificate of vaccination.

7. "The laborer is worthy of his hire"; let him not be engaged by contract and paid with a grudge.

QUARTERLY REPORTS ON MEDICAL PROGRESS.

REPORT ON MATERIA MEDICA AND THERAPEUTICS.*

BY DR. L. ELSBERG.

1. *On the Medical Properties of Persian Taft-Root.* By Prof. C. SCHROFF. (Œsterr. Zeitschrift für prakt. Heilkunde, VII., 27, 28, 29, 1861.)
2. *Radix Caincæ in Dropsy.* By JOSE GENOVES Y TIO. (El Siglo Medico, 23 June, 1861.)
3. *On some Effects of Cubebs but little known.* By M. DEBOUT. (Bulletin de Thérapeutique Médico-Chirurg., LXI., July, 1861.)
4. *Triticum Repens in Irritable Conditions of the Bladder.* By HENRY THOMPSON. (Dublin Medical Press, October 23, 1861.)
5. *The Alleged Dangers which accompany the Inhalation of the Vapor of Sulphuric Ether.* Report of a Committee of the Boston Society for Medical Improvement. (Boston, 1861.)
6. *Dilute Sulphuric Acid to Prevent and Arrest Asiatic Cholera.* By Dr. MCCORMAC. (Dublin Medical Press, October 23, 1861.)
7. *On Chlorate of Potassa.* By SAMUEL R. PERCY, M.D. (American Medical Times, December 14, 1861.)
8. *Calomel in Dysentery.* By W. G. BRUCE, M.D. (Boston Medical and Surgical Journal, December 5, 1861.)
9. *Quinine as a Prophylactic against Malarious Diseases.* Report of a Committee of the U. S. Sanitary Commission. (New York, 1861.)
10. *Bromide and Iodide of Potassium in Epilepsy.* By Dr. WILKS. (Hospital Reports by Jonathan Hutchinson and J. H. Jackson, M.D.; London Medical Times and Gazette, December 21, 1861.)

1. Dr. Polak, physician of the Shah of Persia, sent a root known in Persia under the name of Rish-e-Taft, *i. e.*, Taft-root, for examination, to Prof. Schroff, and the latter has, in a very able and interesting essay, published the results of his investigation. We will only mention here, that Taft-root must be regarded as identical with *Scopolia Mutica*, as a narcotic, acting primarily on the brain, causing delirium and unconsciousness, constantly dilating the pupil, and bearing a special relation to the vagus nerve. Just as the genus scopolia is botanically a transition from hyoscyamus to atropa, so does the taft-root pharmacodynomically and toxicologically also stand between these two. For

* It having been proposed to divide the *Domestic and Foreign Summary* Department of the MONTHLY into "Reports on the various Branches of Medicine," each report to be derived from American as well as foreign sources, I willingly contribute the following, only regretting that the haste in which it had to be prepared, of necessity excludes all claims to a desirable comprehensiveness. Expecting at this moment to follow up the present with a regular quarterly report, I hope to be able satisfactorily to portray the contributions made to Materia Medica and Therapeutics through the current periodical literature.

L. E.

medical use, the same indications would be required as for hyoscyamus, belladonna, or stramonium. It is, however, so powerful that one grain of the powdered bark of the root must represent a maximum dose, gr. $\frac{1}{15}$th the minimum, and gr. $\frac{1}{6}$th the average. An alcoholic extract proved five times as powerful as the bark. Experiments were made on rabbits, and accidentally on the author's boy-servant, who poisoned himself (not fatally, however,) with less than a grain of the alcoholic extract.

2. Of all remedies applicable in dropsy, Dr. Genovés y Tio awards the first rank to the cainca-root, as being powerfully diuretic, slightly purgative, and always tonic. The powdered root may be given daily, in the dose of a drachm or more. A wine of the root has also tonic, but no diuretic and cathartic properties.

3. Aside from the known effect of cubebs upon the genito-urinary mucous membrane, Debout claims for it: (1.) A locally stimulant effect upon the gastric mucous membrane, in consequence of which, the secretion of the gastric juice is increased, and the other functions of the stomach called into greater activity; it is useful, hence, in dyspepsia with flatulency, in consequence of gastric atony, as well as when, in cases of gonorrhœa, balsam of copaiva no longer agrees. To increase this effect on the gastric mucous membrane, one gramme of nitrate of bismuth may be given with every dose of the cubebs. (2.) In small doses, so that it is well borne, (two grammes, three or four times daily,) cubebs exerts a decidedly sedative influence on the cerebro-spinal nervous system, and is very useful in cases of dizziness and weakness of memory; also in chronic inflammation of the neck of the bladder and deep parts of the urethra. The cubebs must be freshly powdered. The dose varies between $\frac{1}{2}$ and $\frac{12}{12}$ gramme, daily.

4. An ounce of the dried and cut underground stem, properly called "root," of the well-known grass, triticum repens, is infused in a pint of boiling water for an hour. The liquor removed by straining has been given, unmixed with any other remedy, in quantities varying from twelve ounces to a pint during the twenty-four hours, in several doses. The taste of the infusion is rather agreeable than otherwise; it produces no nausea or derangement of the stomach.

In vesical irritability produced by inflammation of the prostate and neck of the bladder; in severe gonorrhœa, and especially when the inflammation extends backward; in the pain and spasm caused by calculus, and by aggravated stricture of the urethra, as well as in some cases of obscure disease of the bladder, the good effects of the infusion have been very marked, and it has proved far more efficacious

than the buchu, which may fairly be esteemed the most widely applicable and generally useful of our officinal remedies of this class in such circumstances. In cases of prostatic enlargement in elderly patients it has been of service, but less frequently than in the conditions above named. It has also afforded great relief in renal calculus.

In short, wherever micturition is very frequent or painful, depending on hyper-sensibility of any part of the urinary passages from acute or subacute inflammation, with signs of its presence in the urine itself, the symptoms are mostly materially relieved, and the urine becomes clearer. If improvement is produced at all, it is generally very soon after commencing the medicine; and if none can be observed in four or five days, it is not worth continuing to employ it.

I believe it is important that the plant should be gathered in the spring, shortly before the leaves appear; the stem is then to be slowly dried without artificial heat, and cut into short lengths for use. The infusion obtained from material so treated is superior to that made from plants gathered indiscriminately at any time, and, also, to the infusion made from the triticum repens which is imported by the herbalists for the purposes of French pharmacy in this country.

5. Of the action of anæsthetics on the system we have but an imperfect and inconclusive knowledge. The following statements are cited from the work of Lallemand, Perrin, and Duroy, already referred to. This recent and elaborate treatise depends for its facts upon numerous experiments on animals, and upon such carefully conducted researches as entitle it to confidence.

1st. Anæsthetics are neither transformed nor destroyed in the system, but are rapidly eliminated from it, chiefly by the lungs, and to a limited extent by the cutaneous surface. Chloroform and amylene being insoluble in water, no traces of them are ever found in the urine. Sulphuric ether being more soluble, a small quantity of this may be detected by reagents in the renal secretion.

2d. The blood and the organs of animals dead from *etherism* (the name given to this special intoxication by the above-named authors) contain the anæsthetic agent employed, the presence of which is easily determined by special chemical research; and the following figures show in what proportion the principal viscera contain the anæsthetic, in reference, for each of the agents employed, to the quantity found in the blood:

SOURCE OF ANALYSIS.	CHLOROFORM.	SULPH. ETHER.	AMYLENE.
Blood	1.00	1.00	1.00
Cerebral Substance	3.92	3.25	2.06
Liver	2.08	2.25	1.00
Muscular Tissue	0.16	0.25	Traces

From this it appears that anæsthetics accumulate in the cerebro-spinal system.

3d. It is not easy to explain the deaths from chloroform and amylene, or from ether, (as sometimes seen in the lower animals,) but it would seem probable, both from the phenomena which they present and the experiments which have been made, that they are the consequence of an abolition of the functions of the nervous system, and not of asphyxia.

The general conclusions which have been arrived at by the Committee may be summed up as follows:

1st. The ultimate effects of all anæsthetics show that they are depressing agents. This is indicated both by their symptoms and by the results of experiments. No anæsthetic should therefore be used carelessly, nor can it be administered without risk by an incompetent person.

2d. It is now widely conceded, both in this country and in Europe, that sulphuric ether is safer than any other anæsthetic, and this conviction is gradually gaining ground.

3d. Proper precautions being taken, sulphuric ether will produce entire insensibility in all cases, and no anæsthetic requires so few precautions in its use.

4th. There is no recorded case of death, known to the Committee, attributed to sulphuric ether, which cannot be explained on some other ground equally plausible, or in which, if it were possible to repeat the experiment, insensibility could not have been produced and death avoided. This cannot be said of chloroform.

5th. In view of all these facts, the use of ether in armies, to the extent which its bulk will permit, ought to be obligatory, at least in a moral point of view.

6th. The advantages of chloroform are exclusively those of convenience. Its dangers are not averted by its admixture with sulphuric ether in any proportions. The combination of these two agents cannot be too strongly denounced as a treacherous and dangerous compound. Chloric ether, being a solution of chloroform in alcohol, merits the same condemnation.

Dr. C. T. Jackson, one of the Committee, objects and excepts to the clause in this report in which "all mixtures of ether and chloroform" are denounced; viz., to the words, "the dangers of chloroform are not averted by admixture with sulphuric ether," and to the terms "treacherous and dangerous compound" of ether and chloroform. He believes that a mixture of four measures of ether and one meas-

ure of chloroform may be employed without danger, or with very little danger, and that the risks from chloroform are diminished more than four-fifths by this combination. He believes it to be necessary to have an anæsthetic agent of less bulk than ether, and not so dangerous as chloroform, for army uses, and is satisfied that this mixture, which he has employed and prescribed, completely answers the purpose required.

6. Dr. McCormac, of Belfast, believes he has established on the sure basis of experience, that the exhibition to each individual of one drachm of dilute sulphuric acid every morning in some aromatic vehicle, coupled with the observance of ordinary sanitary rules, will avert the outbreak, or if existent, arrest the further propagation of Asiatic cholera.

7. Dr. Fountain's high expectations of the great value of chlorate of potash in phthisis are not likely to be realized; but O'Shaughnessy's experiments showed how an animal that was nearly dead from administration of poisons which injured the quality of the blood, was quickly revived by this remedy, administered in the way in which it acted most energetically and expeditiously, namely, by injection into the veins. And we saw that in a short time the salt had a diuretic effect, causing the urine to pass copiously, and that some of it was detected unchanged in this fluid. Would it not produce the same results in the human species, in poisoning by the inhalation of the gas of carbonic acid, sulphuretted hydrogen, hydrocyanic acid; and could it not be successfully applied in the recovery of drowned persons? The diseases in which of late years this remedy has been most successfully employed are diphtheria, and ulcerative or gangrenous sore throat. In diphtheria it has been probably used more largely by Professor Jacobi than by anybody else, though latterly he has used chlorate of soda in preference to chlorate of potash, not only on account of its greater solubility, but because, as he informs me, it is more mild in its effects. In these diseases, it is used not only as a wash and gargle to the mouth and throat, but it is also taken internally in considerable quantities. Whether it acts, as has been so repeatedly asserted, by giving up a portion of its oxygen to the blood, I will, after what you have heard, leave you to decide; but we do know that it is not all decomposed, as some of it is found in the urine, saliva, fæces, and sweat, unchanged. Professor Tully and other eminent men reject the theory that it imparts free oxygen to the blood. It is my opinion that it acts rather by its unity as a saline, possessing its own peculiar action, than by decomposition. That it produces a

florid color to the blood, without being decomposed, we have abundant proof. There are symptoms in typhoid fever that are much relieved by its careful exhibition. When, in this disease, the urine is found to be scanty and high-colored, with the brain dull, owing to this scanty secretion, this remedy given in moderate doses, freely diluted with water, for twenty-four or forty-eight hours, will generally be found to give great relief by its restorative and diuretic action. I have seen it of great service in cases of scurvy, where the gums and lips and skin were of a livid color; and it may have acted in the manner that Dr. Garrod asserts that these salts act—by supplying potash to the blood; and if it acted in this way, it must have been decomposed. It did act as a free and efficient diuretic. In mercurial stomatitis it is a very successful remedy, both as a wash, and when taken internally, but it is not by any means a specific. In syphilis, it has been found of but little service. On the whole, it is perhaps the best remedy we have for buccal inflammations and for ozœna.

It is an interesting question to ask, but one which has yet to be answered, What is the difference in the therapeutic effects of chlorate of potash, chlorate of soda, nitrate of potash, and nitrate of soda?

When taken in any considerable dose, it depresses the heart's action, frequently reducing the pulse twenty or more beats in the minute; this it does by its refrigerant and antiphlogistic powers. That it possesses tonic properties, as claimed by Fountain, and others before him, is entirely out of the question, excepting so far as its base may serve as a restorative hæmatic.

In what manner does chlorate of potash act, when taken in small, or medicinal doses; and what are its effects and modus operandi when taken in inordinate doses? We have seen by the experiments of O'Shaughnessy, that it brightens the color of the blood; that it revived animals when poisoned by medicines that acted on that fluid; and we have seen that a part of it, at least, traversed the system, and passed from it in the same state in which it entered it, thus producing its effect by its unity, not by decomposition. We have seen, again, by the experiments that I related to you, that in certain states of the system decomposition does take place, and that both base and acid are used for the reparation of tissues, and that this decomposition takes place only so long as it is needed as a restorative hæmatic; and that as soon as the system is saturated with it it appears in the urine, and after a while passes off also by the bowels. We learn, also, from the large experience of Professor Jacobi in the Dispensary, that it is the best remedy we at present possess for the various forms of inflam-

matory sore mouth, both when used as a wash, and given internally; and that though it frequently fails to afford relief, it is one of the best remedies in diphtheritic exudations, and in mercurial ptyalism. The latter fact is verified by the previous experiments of Herpin, Blache, and Ricord. That it is no *specific* in phthisis, and, in fact, that it frequently does injury in that disease, we learn from the observations of Köhler, Flint, Gay, and others.

As to its effects in large doses, we see that it may even be fatal, and that death may be produced by its action on the kidneys, and upon the stomach and bowels. In the cases related by Tully, in which one ounce was taken at a dose, there was a great uniformity in the symptoms produced. In one instance, in one hour after taking an ounce, the pulse fell from seventy-two to fifty-six, and was considerably smaller and weaker, and in five hours the pulse had fallen to thirty-six. It produced, also, a severe, heavy, and oppressive pain in the stomach and bowels, with free and painful alvine evacuations. Even on the second and third days this severe and oppressive pain was experienced, and was only relieved by large doses of clear brandy, and excessively large doses of opium. If the opium was omitted, the pain returned, of a lancinating and sore character, with intolerance of the slightest pressure. The violence of the symptoms passed off after a copious diuresis, but it left the person with flatulence and other dyspeptic symptoms, which lasted for some time. The treatment in these large doses should be large quantities of warm flaxseed tea, the hot bath, and blistering with ammonia over the kidneys, with large doses of opium and ipecac.

Professor Jacobi has kindly furnished me a most elaborate culling of the German journals, on the effects and uses of this salt, and I am very sorry that I have not time to present those interesting notes to you, especially as Professor Jacobi's own very extensive experience with the salt has enabled him to make an excellent selection of what was worth mentioning. I hope to give you a collation from these notes at a future time. Dr. Jacobi's individual experience with this remedy is perhaps more extended than that of any other person amongst us; for in the German Dispensary, his clinic, and private practice, I find he has notes of its administration in about two thousand cases, and, as I have before said, he uses it to a great extent and with good success, both internally, and as a gargle and wash, in the various forms of stomatitis. In mercurial stomatitis, Dr. Jacobi amply verifies Ricord's experience, and has met with almost unvarying success in keeping off salivation. From the first day of a mercurial

treatment for syphilis, he has given chlorate of potash or chlorate of soda in drachm doses, without any abatement of the effects of the mercury, and no salivation, even where the mercury has been given from four to six weeks. Dr. Jacobi informs me that about three years ago he took two ounces of chlorate of potash in divided doses during two days. During the first day, there was nausea during the whole time, the urine was increased, free salivation all day, slight diarrhœa, and loss of appetite. During the second day, the nausea was more intense, a constant spitting, a very sore feeling in the intestines, diarrhœa increased, with general uneasiness and irritability; he was not fully over its effects for several days. But Dr. Jacobi says there are but very few to whom he would give this dose. As to its detection in the secretions, Isambère found it in the saliva five minutes after taking it, in the urine in ten minutes; he found it, also, in the milk, tears, nasal mucus, and perspiration, but not in the fæces or semen.

8. We hear much talk, in this our day, in derogation of *mercury* in all its forms. The common people, in general, have a sort of superstition about this drug. Some have been induced to regard it as the sum of all medical villainies, and are inspired with a holy horror whenever it is spoken of in their hearing. While, on the other hand, there are those who regard it as necessary in some desperate cases where extraordinary means are required to stay the hand of death. They think it a most powerful remedy, which should be used only in very obstinate cases. My experience with mercury has proved it one of the mildest and most efficient remedies in the whole list of the materia medica. In dysentery it is the only remedy that has proved satisfactory in my hands. Some have recommended "*podophyllin*" as a "substitute" for calomel, especially in this disease. But as a disordered liver is, in my opinion, the essential part of the affection, my experience in the use of podophyllin at once forbids its administration in my practice; for experiment has proved to my mind that it has no action whatever upon any of the hepatic organs. Besides, it is nauseating, disagreeable to take, and only augments, in a most marked degree, the dysenteric pain and discharges. Now calomel, on the contrary, is easy of administration, easy in its action, *and certain to act in the right direction.* With it I have treated many and severe cases of dysentery—that of my own among others—and in not a single instance has it ever failed me; and in not a single instance have I ever witnessed any untoward symptoms from its use, in *any* disease. In dysentery I commonly use it as follows: R.—Hydrarg. chlorid. mit., ℈j.; opii pulv., gr. iij. M. Div. in chart. No. 6. Dose, one powder

every three or four hours. With this I succeed in not only arresting the discharges, but in curing the disease. Some disapprove of calomel in the "acute stage" of dysentery, but I have found it of uniform value in *all* stages. Let others try it, and report results.

9. "In conclusion, it may be fairly assumed, even from the evidence thus imperfectly and hastily collated, that the power of quinine as a preventive of miasmatic disease is fully established as a medical fact; and that it can be employed, not only with entire safety, but with the greatest advantage, even to the saving of life, by healthy persons exposed to malarial influences. Viewed in the light of humanity, as well as of economy—both of men and money—the prevention of disease is of far greater importance than its cure, and your Committee venture to express the opinion that intelligent and judicious action on this important subject, at the hands of the proper authorities, would save much sickness and many valuable lives during the present campaign." [To this we add the deductions from the experience of nine years' use of quinine in tropical malarious districts, recently communicated to the *American Medical Times*, viz.: (1.) That no serious harm to the system ensues from the long-continued and judicious use of quinine. (2.) That quinine, given as a *prophylactic, will certainly prevent the developments of miasmatic disease*, and neutralize malaria already in the system. (3.) That the amount of quinine required to maintain a status of health under malarious influences is much less, when used as a prophylactic, than as a curative after development of miasmatic disease. (4.) That the amount of quinine required as a prophylactic is more uniform, than as a remedy after attack of malarial disease. (5.) That quinine will not always restore to health a person *after repeated attacks* of malarious disease, but will *frequently fail* to prevent malarial cachexia, especially if not removed from the miasmatic influences. (6.) That cold, clear infusion of coffee is the preferable diluent for the morning dose, and whiskey for the evening dose of quinine as a prophylactic. (7.) That quinine dissolved in spiritus nitri dulcis produces very happy effects when administered during paroxysms of malarial fever.]

10. Dr. Wilks thinks that he has found the bromide and iodide of potassium to be "singularly efficacious in those cases of epilepsy which are due to a local affection, arising either from syphilis or injury," as well as where "epileptiform fits arise from lead-poisoning."

He gives thirteen cases illustrative of the exhibition of these remedies in this disease. The dose employed was usually three grains three

times daily. Two of these cases are considered as definitely cured, six as improved, and five as giving no satisfactory results.

"Since using this remedy, Dr. Wilks added, now for two or three years, and in a large number of cases, he had undoubtedly had more success than heretofore, being fully aware, he said, of the remarkable fact that epileptics generally seem to be better on any new remedy, whatever its nature may be; and also that even should it exert a real influence, the benefit is often only temporary. The *rationale* of this success is connected, we imagine, with the fact that many cases of epilepsy depend on a local affection of the bones or membranes, which the remedy removes by its absorbent powers."

QUARTERLY REPORT ON PHYSIOLOGY.

By Prof. R. Cresson Stiles, M.D.

1. *Experiments on the Motions of the Heart.* By M. Marey. (Gaz. Méd. de Paris.)
2. *Researches of Prof. Austin Flint, Jr., into the Motions of the Heart.* (Am. Journal of Medical Sciences for October.)
3. *Report of a Case of Muscular Atrophy, accompanied with Disease of the Spinal Cord.* (Beale's Archives of Medicine, October.)
4. *Ataxie Locomotive Progressive.* By M. Hip. Bourdon. (Archives Gén. de Médicine, November.)
5. *Case of Neuralgia dependent on Fibrous Growth of the Nerves.* (Arch. Générales de Méd., November.)
6. *Sub-Periosteal Resection.* (Acad. des Sciences, Paris, Oct. 14th.)

Amid a multiplicity of isolated observations and experiments bearing upon the progress of physiology, contained in the last quarter's journals, a decided advance may be discerned in more than one department of the science. Although the growth of a science, like that of organized beings, proceeds by imperceptible increments and gradations, it is none the less marked within definite periods, and appears more distinct when we confine our attention to the separate members of which it is constituted.

Several articles embodying the results of patient research, with unquestionable preparatory fitness for observation on the part of the authors, have appeared within the above period on the *Motions of the Heart*, and the *Circulation*. In order that the bearing of these upon the progress of our knowledge may be fairly recognized, it will be necessary to present the questions in dispute, with various authorities on the subject, which we will do as briefly as possible, taking as our

guide and aid to memory the best treatises on the subject with which we are acquainted.

The spirit of opposition and obstinacy which met Harvey's announcement of the results of ten years of careful, able, and honest study of the heart's rhythm and the circulation, has not failed to propagate an uninterrupted series of misapprehensions and perversions on this subject. These have not been due so much to the errors of observation of physiologists, as to the dogmatism of practical physicians, unused to physiological research, compelled daily in the management of disease to reason from inadequate data, and having preconceived theories and modes of practice to support.

The doctrine of Harvey, respecting the action of the heart, which was the faithful record of what he had a thousand times observed on different classes of animals, has been summed up as follows: "The heart is seen to present alternations of motion and rest. At the moment of action it rises to a point, and strikes the walls of the chest with a perceptible shock. At the same moment it contracts in all directions, but principally in a lateral one; so that, while diminishing in volume, it appears longer and narrower. At the moment the heart contracts, its ventricles expel the blood through the arterial openings. There can be no doubt of this, for if an opening be made in the ventricles, the blood is seen to escape forcibly on each contraction of the heart. It is then at the same moment that the heart contracts, the point rises, the impulse is produced, and the blood expelled."

When the discovery of the application of *auscultation* to the recognition of diseases of the heart gave a practical bearing to the physiology of its activity, it became the ground of violent, unreflecting partisanship, as well as of serious investigation. The chief point at issue was the cause of the impulse, although the mode of formation of both the first and second sounds was warmly contested.

At the very outset we are met by a grave perversion of the generally recognized explanation of the heart's activity, in order to meet the demands of an incipient and tentative method of investigation into the heart's pathology. *Laënnec* adopted the views of Harvey and Haller respecting the coincidence of the impulse with the ventricular systole, and attributed to it the first sound, but found himself compelled to renounce their plainest teachings in explanation of the second sound, which he attributed to the contraction of the auricles. Harvey had accurately described the auricular contraction as immediately preceding that of the ventricles.

Hope recognized the true origin of the second sound, and adopting

the views of Laënnec respecting the first, supported his teaching by numerous experiments. He attributed the first sound to the sudden tension of the mitral and tricuspid valves, and of the muscular fibres of the heart, prolonged by the sound of muscular contraction. To us this seems the true explanation of the first sound, the nature of which it is impossible to attribute to one sole and single cause.

Rouanet attributed the heart-sounds exclusively to the play of the valves; the difference in the size of the auriculo-ventricular and the semilunar valves serving to explain the difference in pitch and duration of the first and second sounds.

Bouillaud explained the second sound by an active diastole of the ventricles, which, tending to form a vacuum, closed suddenly the semilunar valves. In this he fell back upon the doctrine of Galen, retrograding beyond Harvey and Haller. Galen thus describes the aspiration exerted by the heart during what he represented as its active diastole: "Attrahendi facultatibus præditum, arripiens ac veluti exsorbens influentes materias citissime suorum ventriculorum excipit."

While there seemed no divergence in the results of experiment respecting the coincidence of the impulse with the ventricular systole, M. Beau, the distinguished physician of La Charité, threw a new theory in the very teeth of experimental revelations, which he has zealously advocated, even to our last advices, gaining numerous adherents both in France and America, in spite of the opposition of opinion on the part of the Dublin, London, and Philadelphia committees, appointed to investigate the question of the relation between the heart's action and the sounds perceived on auscultation, on which they all substantially agreed, and all differed completely from M. Beau. According to the last-mentioned authority, the point of the heart does not rise nor project in any manner during the ventricular systole, but the impulse results from the systole of the auricles, which is also the cause of the first sound.

1. The recent experiments of M. Marey, to which this short sketch but serves as a prelude, have accomplished all that could be asked of experimental physiology in the investigation of the questions at issue, and have set further theorizing respecting them at rest by the force of accurate demonstration. Two years ago we listened to M. Marey's earliest communications to the Society of Biology, at Paris, and marked the zeal and mechanical ingenuity manifested in his researches, which have yielded such admirable results. In spite of the impatience of the venerable President, M. Rayer, of occasional reclamations of

priority on the part of Mr. Brown-Séquard, referring to various publications in various parts of the world, and of the distraction of the Society, M. Marey continued to prosecute his labors, and to present their results. In the recent experiments on the heart's rhythm, to which we refer, he was ably seconded by M. Chauveau, of Alfort, the author of an excellent treatise on the "Comparative Anatomy of the Domestic Animals," and of valuable monographs in several departments of experimental physiology. M. Marey conceived that by a simple application of the principles and contrivances which had served him in his investigations upon the pulse, it would be possible to record the varying pressures within the cavities of the heart, with their comparative periods, with a precision far surpassing the grosser methods of experimentation before employed. In all investigation into the heart's mode of activity, it has hitherto been necessary to open the thorax, thus producing lesions calculated to disturb the rhythm of an organ which sympathizes so closely with all portions of the body, so that we find a recent author asserting that "there is manifestly but one correct mode of study"—"that is, to expose the heart in living animals during its action, and observe its movements." But M. Marey has obviated this necessity. Through an opening in the jugular vein of a horse, as near as possible to the heart, he introduces tubes, filled with air, and closed at each end by a flexible membrane, into both the cavities of the right heart. The pressures exerted on the membranes within the cavities are instantaneously transmitted to the recording indices in connection with the membranes closing the other end of the tubes, and the times and intervals of pressure are recorded on a revolving cylinder or regularly moving slide, on a principle well known both in physics and physiology. The increments and intervals of pressure are thus *written* in a series of undulating lines, just as the arterial pressures are recorded by the well-known Kymographion, and may be compared for their different source, in all their gradations, at every instant. By comparing the lines traced by the auricular and ventricular activity, the instantaneous contraction of the auricle is fairly contrasted with the sustained pressure due to the activity of the ventricle, while the auricular contraction is seen to precede the ventricular by a very short interval, as announced by Harvey and Haller. But M. Marey does not stop here. He causes the impulse to be recorded simultaneously with the pressures within the heart. To this end, he introduces an empty bladder through a small opening within the parietes of the chest, opposite the point of impulse, and having afterwards distended the bladder

with air, by means of the tube in connection with it, brings, as before, the membrane closing the opposite extremity of the tube in connection with a recording index, which marks the times of given pressure on the same vertical line on the moving slide, with the simultaneous activity or repose manifested by the auricles and ventricles. The coincidence of the impulse with the systole of the ventricles thus receives a demonstration beyond the possibility of cavil, and the contradictions to this view, so strangely advocated even at the present time, are silenced.

A translation of a portion of M. Marey's paper, from the *Gazette Médicale*, will better explain the results of his experiments. After describing his apparatus and its application, and presenting the figures traced by it, he says: "Let us now examine the succession of the movements recorded by the several lines traced (on the sliding-scale.) It is evident that whatever is found on the same vertical line is synchronous, since the levers are all equal, and exactly superposed. Besides, points of comparison have been taken with the greatest care, so as to avoid all error. Let fall a perpendicular at the point where the line marked by the auricle indicates the beginning of the systole, and it is seen that the line falls into that of the full diastole of the ventricle, and that it precedes considerably the point of the second line, which marks the ventricular systole. The same want of coincidence between the systole of the auricle and the impulse will be observed in all the pulsations; therefore the impulse of the ventricle cannot be produced by the auricular systole."

"Let us now examine the onset of the ventricular systole, and from each of the points which correspond to it, let fall a perpendicular, cutting the third line, that of the impulse; we observe that between the commencement of the systole and that of the impulse there is the most perfect synchronism."

"It is in the following manner that the impulse is produced: at the commencement of the systole, the ventricle which was relaxed and rested lightly against the thoracic walls becomes suddenly hard and globular; it then presses strongly against the parietes, and during the whole systole maintains this pressure, which slightly diminishes as the ventricle diminishes in volume in emptying itself. Then comes the diastole; the ventricle becomes soft, and the pressure against the thoracic parietes ceases suddenly; at the same time that, in the ventricle itself, the exalted tension arising from the systole ceases suddenly. Thus is recorded on the lines traced a perfect coincidence between the end of the systole and the end of the pressure against the thoracic parietes, which might be called the *duration of the impulse*.

"Lastly, if we compare the relative duration of the auricular and ventricular contractions, it is seen that the first is very short, while the second is much more prolonged. As it respects the repose of the whole organ, while the auricle, as well as the ventricle, are relaxed, it is also quite long; but in the horse, which was subjected to experiment, it had not quite its usual duration, on account of a greater frequency of the pulse than was normal. But the greater frequency has the effect of diminishing the period of repose of the organ."

In thus recording the application of an ingenious apparatus to the study of the heart's activity, and the results obtained, according so closely with the most authoritative interpretation of its phenomena, and contradicting so plainly the opposing views which, under the sanction of a few great names, have distracted the opinions of the profession, we believe that we chronicle a real progress in this department of physiology. We can see but little difficulty in realizing all the conditions of the greatest accuracy in the structure and disposition of the apparatus employed in these experiments. The oscillations of the membrane closing the outer extremity of the flexible tube introduced into the heart must be synchronous with the pressures within its cavities; the only care required is in the adjustment of the recording apparatus, so that what is really synchronous shall be recorded on the same perpendicular. We have had frequent occasion to catheterize the cavities of the right heart on the lower animals, and have observed the jets of blood from the auricular and ventricular systole, and can see no practical difficulty in the way of recording their respective pressures on an animal of the size of the horse. While few arguments of value can be drawn from the action of the heart in fishes, reptiles, and birds, which can serve to explain the activity of the human heart, the strict anatomical resemblance between the latter and that of many of the mammalia indicates a similar concordance in their functional activity.

2. Prof. Austin Flint, Jr., has published in the October number of the *American Journal of the Medical Sciences*, a series of researches tending to support the views of Riolan, Borelli, Winslow, F. Queye, Pennock, and Moore, of the Philadelphia Committee, and Dalton, respecting the lengthening of the heart during the systole. Prof. Flint has also invented an instrument by which, even at a distance, the elongation during the systole may be readily recognized. It is a simple contrivance, by which the long arm of a lever amplifies the oscillations of the short arm, kept by elastic bands in contact with the point of the organ. By a canula introduced into the ventricle between the muscular fibres,

the jet of blood is seen to be synchronous with the motion of the lever, indicating the propulsion of the point. The instrument, simple as it is, has been called the *mekeoscope*. We question whether the term has sufficient periosteum to ingraft it permanently into scientific technology. Prof. Flint's view of the play of the valves and the production of the sounds is expressed in the following extract from the article just indicated: "When the ventricles act, they exert a force sufficient to overcome the arterial pressure, which keeps the semilunar valves closed; and they close at the same time the auriculo-ventricular valves, producing one element of the first sound of the heart. The systole of the ventricles ceases; its pressure is taken off; the arterial pressure closes the semilunar valves, producing the second sound; the venous pressure opens the auriculo-ventricular valves, and keeps the orifice patent until the succeeding contraction of the ventricles." Prof. Flint takes decided ground against the hypothesis of an active diastole of the heart. He says: "I believe that all physiological authors agree on this point, though Dr. Wood, late of the University of Pennsylvania, does, or at least did, hold the opinion, that the heart hardened during the diastole. One who examines the heart in action cannot be mistaken on this point." In this view, Dr. Wood but espoused a theory advocated by many high authorities, old as Galen, and supported by a no less distinguished name in experimental physiology than that of Magendie. We recollect well the zeal and instance with which our honored instructor, Dr. Wood, espoused the theory of an active elongation of the muscular fibres of the heart, and of the capillaries. He rarely theorized, but in this instance was in the habit of representing the sarcous particles of the ultimate muscular fibrils, as similarly electrified, when a repulsion would ensue, and the fibre would elongate; while supposing the alternate sarcous particles only to be electrified, attraction and shortening would result—an illustration in which he was preceded by Darwin, in his Zoonomia. Our knowledge of the nature of muscular activity is vague enough to admit of such bold theorizing; but we are, I think, sufficiently well acquainted with the *physical* constitution of the muscular fibre to be warranted in taking strong ground against an active diastole of the heart, or of the capillaries. The histologist entertains but slight respect for this doctrine, although supported by so high authority; he would be as likely to expect the lengthening hair of a hair-hygrometer to exert a force to drive back the recording index against the force of gravity, or the arm to be extended by the action of the biceps muscle, as to admit the generation of mechanical force by the elongation of elements of such tenuity, flexibility, and semi-solidity as the muscular fibres. The endow-

ments of the anatomical elements are not capricious and varying with variations in locality; and when but one mode of action is recognized in the muscular fibre throughout the widest extent of its distribution, it would be unphilosophical to endow it with another when it happens to be present in a situation where an additional endowment would be convenient to meet theoretical exigencies. For Dr. Wood, inflammation is an *exaltation of vitality;* to make his theory consistent, he required an active diastole.*

The experiments of M. Marey have completely set at rest the hypothesis of an active diastole of the heart, and we are able to follow a simple course of reasoning in explanation of the heart's sounds. Recognizing when force is exercised, it is natural to ascribe the sounds resulting to the periods of its exercise; recognizing an exercise of force by the muscular fibre of the heart in but one movement, viz., the systole, we attribute to this movement the first sound, while the resilience of the yellow elastic tissue of the arteries yields the force sufficient to fully explain the second.

The observation of pathological phenomena, those experiments performed by disease on the human frame, has not been without fruit in other departments of physiology. It is a grave error to regard physiology as summed up by experiments on the lower animals, as an inoffensive, unauthoritative, innocent play with vital laws, foreign altogether to the great interests of practical medicine. On the contrary, it is the science of which pathology is but the distorted, maimed, and sickly offset. Physicians, engaged from the earliest period of their studies in the contemplation of the morbid and aberrant, are liable to regard pathology as an independent science, having its own laws and principles of supreme authority. They are in danger of forgetting the narrow circle by which their studies and aims have been bounded, and instead of representing to themselves disease as only an aberration of the natural laws of organization, to be understood only by a thorough acquaintance with those laws, and to be treated rationally only by the application of physiological principles, they fall under the sway of dogmas, old women's recipes, favorite authorities, and intense veneration for antiquity, either in years or teaching.

3. The recognition of the coincidence of definite alterations of structure in the central nervous system, with definite pathological phenomena, cannot fail to elucidate many of the obscure points respecting the normal activity of its centres, and it is in this direction that we may

* We have elsewhere endeavored to show that the meteorologist has as great a claim to satisfaction when a thunder-storm is defined to be *an exaltation of the weather*, as the scientific physician when inflammation is denominated "*an exaltation of vitality*."

expect most valuable additions to our present knowledge, foreshadowed by the researches which we have now to bring forward. Beale's *Archives of Medicine* for October contains the report of an interesting case of muscular atrophy accompanied with disease of the spinal cord, the microscopic examination of which was made by J. Lockhart Clarke, (well known for his researches on the anatomy of the central nervous system,) revealing alterations of structure, which appear at first sight inadequate to account for the symptoms, as the cord appeared quite healthy to the unassisted eye. A somewhat similar case is recorded in the *Archives Générales de Médicine*; one of "ataxie locomotrice progressive," accompanied by manifest lesions in definite portions of the spinal cord, the microscopic appearances of which are, as in the case of Mr. Clarke, faithfully represented by plates. The latter article is reported by M. Hip. Bourdon, as presented to the Société Médicale des Hôpitaux. We are confident that the records of these two cases, showing anatomical lesions in explanation of what were considered essential disorders, will give a new impulse to the study of the anatomy and pathology of the spinal cord. The gradual wasting of the muscles, with want of co-ordination in their activity, was in both cases found to coexist with pathological alterations in the posterior portion of the cord. In the case investigated by Lockhart Clarke, localized lesions were observed in the posterior gray cornua, consisting in a foreign deposit in its substance, most abundant on the side on which the muscular atrophy was most marked. Amyloid corpuscles were found abundantly in the vicinity of the spinal canal, and under the membrane of the fourth ventricle, which was thickened by an abnormal epithelial growth. Mr. Clarke's own words will best make known the bearing of his observations.

"With regard to the pathology of Dr. P's case, the wasting and loss of power in the muscles of the arms and hands, must be considered, I think, to have originated not in muscles themselves as a specific muscular disease, and as the consequence of some peculiar defect of nutrition, but in the spinal cord, as the result of some peculiar degeneration and softening of particular points of the gray substance. By the history of the case, we learn that the loss of power and the pain *preceded* the wasting of the muscles, and that there was that muscular contraction, with flexure of the joints, which is frequent in softening of the nervous centres. The *upper* extremities *alone* were the parts affected; lesion of the cord was found only in the cervical region. *Both* upper extremities were involved in the disease, but the *right* was more so than the left; on both sides there was lesion of the

spinal cord, but most on the *right* side." "I have little hesitation in declaring that if the cord in the case now under consideration had been examined in the way that cords have usually been examined, it would probably have been pronounced healthy, and that the disease would have been chronicled as a case of 'paralysie musculaire atrophique,' accompanied with pain; for in some places, the lesional spots, though numerous, were so small as to be quite imperceptible to the naked eye." "There may be very obscure structural changes in the gray substance of the cord, or perhaps only in the ganglia on the posterior roots of the nerves, that may affect the nutrition of the parts to which they are subservient, without interfering with the functions either of sensation or motion; and in cases like the one now in question, where the lesions occur in small isolated spots, the limitation of disease to particular muscles, or even to particular fasciculi of any one muscle, could be explained, I think, by the particular distribution of separate nerve-fibrils within the gray substance."

4. In the case reported by M. Bourdon, the progressive paralysis was found accompanied by a marked degeneration and hyperæmia of the ganglia on the posterior roots, of the roots themselves, and of the posterior columns of the cord. Sensation was not affected, nor was pain present; proving that a deep degeneration may coexist with preservation of delicate nervous endowments. According to M. Bourdon, the disorder had its origin in the ganglia of the posterior roots, and was propagated from these centres to the posterior roots and the cord. The control of the posterior segment of the cord over muscular nutrition seems proved by these records, and must be taken into consideration in our estimation of the results of experiment.

It has quite recently been proved that the cilio-spinal region of the cord exerts its control over the iris through the sympathetic, only by its posterior segment. Galvanization of the anterior, although resulting in violent muscular contraction, has no influence over the diameter of the pupil.

5. Another instance of the value of accurate observation on the pathological anatomy of nervous disorders follows the case of M. Bourdon in the *Archives*. A case of violent and rebellious neuralgic pain of long duration was found, on microscopic examination, to be accompanied by a fibrous growth of new formation, a diffused neuroma among the peripheral branches of the affected nerves. Extirpation of the affected part was followed by immediate recovery.

Should these observations lead to a more thorough study of the nervous alterations which give rise to many so-called essential diseases

of the nervous system, they open a new field for a rich harvest of facts in this interesting but uncultivated department of physiology.

6. Practical testimony continues to be given to the value of the physiological researches of M. Ollier on the regeneration of bone by preservation of the periosteum. At the session of the Academy of Sciences, of Paris, of October 14th, M. Maisonneuve presented the specimens and plates of six new cases of sub-periosteal resections, all attended with a successful result. At the same session, M. Demarquay brought forward two cases of the same, one of which was for a necrosis of the femur. In our own country, also, surgeons are not idle in affording testimony to the value of the impulse thus given to surgery by physiological discovery.

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A Book About Doctors. By J. Cordy Jaeffreson. Author of "Novels and Novelists," "Crewe Rise," etc., etc. Reprinted from the English Edition. New York: Rudd & Carlton, 130 Grand Street. London: Hurst & Blackett. MDCCCLXI.

Physicians, of all other men, give themselves the least holiday. Christmas and New Year's alike, professional calls must be made, patients must be prescribed for, scenes of sorrow must be witnessed, just as if they were not festal days, when all the world were forgetting the cares of daily life, and giving themselves up to leisure or pleasure. But while there are imperative duties which will not be laid aside at convenience for a day or a week, still, we may, without slighting them, allow our thoughts to wander a little on days like these, from their sombre routine of study and analysis, into the green fields of imagination, or of pleasant gossip, and be all the better men and sounder thinkers for it. It is with this view that we propose to indulge both ourselves and our readers in a stolen glance into the hidden delights of this most taking book "About Doctors"—the doctors of Merrie Englande in the olden time. And while we enjoy a quiet laugh at the oddities and foibles of these quaint old boys, let us not forget, where it is due, to bow reverently to genius and the spirit of earnest inquiry, struggling upward amid the superstitions and errors of its day. We shall have need enough for posterity to look leniently upon our own

absurd theories and mistaken dogmas, much as we pride ourselves on the advances that science has made even in our own day. One little moral we may deduce in anticipation—that he who follows our noble calling *merely* for filthy lucre's sake, will be remembered, if he have brains enough to make himself remembered, only to be ridiculed or despised; while he who enters upon it with an earnest desire to further its great ends, will be had in memory as a world's benefactor.

Chapter I., entitled "SOMETHING ABOUT STICKS, AND RATHER LESS ABOUT WIGS," is a proper prelude to the portrait gallery, giving us an idea of the costume and appearance of these worthies in general, and greatly assisting in our appreciation of them individually.

The physician's cane, invariably seen in all old pictures of medical worthies, and generally greatly magnified in caricatures of them—as see the copy of the "Undertaker's Arms," by Hogarth, facing the title-page of this work—is described as being "long as a footman's stick, smooth and varnished, with a heavy gold knob or cross-bar at the top."

"This knob," we are told, "in olden times, was hollow, and contained a vinagrette, which the man of science always held to his nose when he approached a sick person, so that its fumes might protect him from the noxious exhalations of his patient." We have seen the time when we could have wished for such a cane ourselves.

The author supposes the barber's—once the surgeon's—pole to have been intended to represent the staff which the patient held in his hand while being bled; the blue and red stripes indicating respectively venous and arterial blood, and the white, the bandage. This is somewhat fanciful, especially as even in those days of heroic bleeding, we are not told that they were in the habit of opening arteries in the arm.

For a young physician, the gravamen of a wig must have been a god-send, for when

> "Each son of Sol, to make him look more big,
> Had on a large, grave, decent, three-tailed wig.
> * * * * * * * *
> In reverend wigs old heads young shoulders bore,
> And twenty-five or thirty seemed three-score."

With what satisfaction would a graduate of to-day, whose cheek is as smooth as the sheepskin which proclaims him to be a "vir ingenuus," and who finds that even spectacles of the greenest hue fail to make him sufficiently reverend to hope to command a practice, disguise his youth in one of these voluminous head-pieces! The quack,

who occasionally shows himself on Broadway in a wig and small-clothes, is probably a pretty clever representation of the English physician of three hundred years ago. It was an odd custom, that which prevailed among physicians previous to Charles II's reign, of making their visits on horseback, but seated "sideways, like women." We are not at all surprised to hear that after the Restoration, every London physician who either was or wished to be successful, exchanged this mode of progression for a "little coach and two horses." In Queen Anne's time they got to cutting a great dash with their chariot and "four," or even "six." We wish that we could put enough faith in the good sense of our fellow-creatures to suppose that the author is mistaken in imagining that people employ a physician who drives a carriage, sooner than one who does not, simply for the sake of having the carriage seen in front of their door; but we fear we must allow such to be the case, even in our own country, which we honestly think is less given up to snobbishness than dear old England. "A physician without a carriage," he tells us, is there "looked upon with suspicion," and "marked down as a *mauvais sujet*, in the same list with clergymen without duty, barristers without chambers, and gentlemen whose Irish tenantry obstinately refuse to keep them supplied with money." The unfortunate man is certainly not so low in the social scale with us. However, we may say, for the benefit of beginners, that a young medical friend has assured us that a horse and gig doubled his practice the very first year that he sported it.

The bitterness of the following little piece of irony is not one whit overstrained, as many an industrious and intelligent, but impecunious young physician, can testify to his sorrow:

"On the whole, the carriage system is a good one. It protects stair carpets from being soiled with muddy boots, (a great thing!) and bears cruelly on needy aspirants after professional employment, (a yet greater thing! and one that manifestly ought to be the object of all professional etiquette!")

To complete the picture of the old physician, we must, on cold December days, give him a muff; truly, a delectable invention, when, as at this frigid season, one enters his patient's room scarcely daring to touch his icy fingers to the wrist, lest he should bring on a chill.

In Chapter II., however, we learn that there were a race of physicians in Britain prior to these big-wigged gentry, who adopted a more attractive style of dress, for Chaucer clothes his doctor in crimson and sky-blue. Among these are mentioned Linacre, founder, and first President, of the College of Physicians in Henry VIII's time;

Caius, whom Shakspeare is thought to have shown up in the "Merry Wives of Windsor;" Mayerne, physician to at least two French and three English sovereigns. The reason of his popularity with crowned heads is not difficult to divine. "He recommended a monthly excess of wine and food as a fine stimulant to the system;" certainly a pleasanter prescription than his "Balsam of Bats."

It seems almost desecration to mention in the same breath the sagacious mind of Harvey, who was contemporary of the latter. The following description calls up, perhaps, rather a different figure from that we generally associate with the discoverer of the circulation. It is by Aubrey: "He was not tall, but of the lowest stature; round-faced, olivaster (like Wainscott) complexion; little eie—round, very black, full of spirit; his haire was black as a raven, but quite white twenty years before he died." He was one of the first coffee-drinkers in England. He is described as "very cholericque," and "apt to draw out his dagger on every slight occasion." Like many another, the scalpel has made him more famous than the dagger. Good old Bulleyn, the botanist of Queen Elizabeth's day, has left a very readable work in his "Book of Simples." Among them could hardly be included the "*Electuarium de gemmis*," which contained eleven precious stones and metals, rubbed up with aromatics, and had the effect, as might be expected, of making kings and noblemen bold-spirited. Who would not be bold after swallowing diamonds, pearls, and sapphires?

Thomas Browne, so well known as the author of "Religio Medici," the most remarkable book of its day, seems to have been the original "Tom Brown at Oxford." Both his son and grandson followed him honorably in the profession. He is described as having been all that a gentleman should be; as modest as he was cultivated; simple in life and unostentatious in dress. A greater contrast cannot be imagined than that offered by his literary opponent, Sir Kenelm Digby, "courtier, cook, lover, warrior, alchemist, political intriguer, and man of letters," whose genius, however, was too versatile to allow of his rising to great eminence as a physician. But he gained no little notoriety by a "Sympathetic Powder" which he invented, which possessed the wonderful power of healing wounds on simply moistening a portion of the clothing of the wounded man with a solution of it, at however great a distance he might be from the scene of operation. The author, speaking with some horror of Sir Kenelm's Receipts for Cookery, says oddly enough, it seems to us, reading it in these Christ-

mas times, "Minced pies are made (*as they still are amongst the homely of some countries*) of meat, raisins, and spices mixed."

Sydenham and Heberden have hardly the space given them that their distinguished merits would seem to entitle them to; while Sir Hans Sloane, whose name is comparatively unknown on this side the water, is considered worthy of a chapter, to which the two before mentioned are but pendants. He succeeded Sir Isaac Newton as President of the Royal Society, was physician to George II., and enjoyed the honor of being the *first medical baronet*. In an Englishman's eyes this is of course enough to elevate him above a man of greater genius, but who could not prefix his name with a "Sir." In this connection an amusing extract is given from the records of the "Royal Society" of the time of Charles II. For example:

"His Grace (the Duke of Buckingham) promised to bring into the Society a piece of a unicorne's horne." And,

"Sir Kenelm Digby related that the calcined powder of toades reverberated, applyed in bagges upon the stomach of a pestiferate body, cures it by severall applications."

"June 26th," certain gentlemen "were appointed" "to torment a man presently with the sympatheticall powder"—the same powder of which we have already spoken.

Sir Humphrey Davy, in five shirts and five pairs of stockings, and coat, breeches, and hat of a lively green, angling by the river-side, would hardly be recognized by any of us as the astute philosopher and keen inquirer into the secrets of nature.

Apothecaries and grocers seem to have somewhat commingled their several businesses in Queen Elizabeth's time. Three of the directions given them by good old Bulleyn might be well hung up in their shops to-day.

"The Apoticarye

"1.—Must fyrst be clenly."

"13.—That he neither buy nor sel rotten drugges."

"17.—That he meddle only in his vocation."

They soon found, however, that they knew quite as much as the doctors, and were of course not at all disposed to confine themselves to their "vocation;" and so, for a while, doctors and druggists quacked it along, side by side, each vending their own nostrums, waging all the time a bitter warfare upon one another, the history of which the author gives us under the name of the "Dispensarian Campaign."

But if the reader supposes that when doctors and "apothecaryes" vied with each other in charlatanry, there were no *quacks* proper—men

who, for impudence, knavery, and ignorance, entirely eclipsed the regular profession—Chapter VI. will undeceive him on that point. Itinerant quacks traversed the country districts, on horseback, or in chariots, haranguing the gaping crowds in the market-places, and fleecing them with the best possible grace. When they erected platforms from which to proclaim the virtues of their nostrums, they were called "mountebanks." The she-quacks, Chap. XVI., seem to have been quite as successful and much more nasty than their rivals of the sterner sex. Think of Joanna Stephens receiving five thousand pounds, which to-day would be equivalent to ten thousand, at least, (the greater part of it by vote of Parliament,) for making known her secret preparations for the cure of gravel, which consisted of such trash as this: "The Pills consist of snails calcined, wild-carrot seeds, burdock seeds, ashen keys, hips and hawes, all burnt to blackness—soap and honey." Mrs. Mapp, also called "Crazy Sally, of Epsom," was another vulgar hag, who was petted by the fastidious aristocracy of London, and worked wonderful cures, principally in the bone-setting way. An interesting article in our present number, on "Animal Substances used in Medicine by the Ancients," gives one some idea of the disgusting nature of many of the nostrums of those days. Fæces seem to have been held in especial esteem, and the more feculent the more efficacious.

The two well-considered chapters on "Imagination as a Remedial Power," (XIV.,) and "Imagination and Nervous Excitement," (XV.,) discuss the old ideas of Planetary Influence and the Efficacy of the Royal Touch—the first Mesmerist, Greatrakes, a Round-head Cavalry Officer, Puritan gentleman, Christian man, and finally self-deceived miracle-worker—the Yankee trick of Perkins' Tractors, one of which, by-the-way, reposes quietly on a shelf in our own closet—and the second Mesmerist, Mesmer himself, an ignorant, impudent pretender, who grew rich on other men's ideas, and turned Paris mad by the sheerest imposture. The author says, most pointedly and justly, in treating of this and kindred delusions: "To electro-biologists, spirit-rappers, and table-turners the same arguments must be used as we employ to mesmerists. They must be instructed that phenomena are not to be referred to magnetic influence, simply because it is difficult to account for them; that it is especially foolish to set them down to such a cause when they are manifestly the product of another power; and that all the wonders which form the stock of their conversation, and fill the pages of the *Zoist*, are to be attributed not to a lately discovered agency, but to nervous susceptibility, imagina-

tion, and bodily temperament, aroused by certain well-known stimulants."

The "Temple of Health," which raised its impudent front above the Thames on the Royal Terrace, as late as the termination of the Revolutionary war, with its gorgeous and grotesque furniture, its luxurious apartments, its music and perfumes, its shrine of Apollo, containing "the irresistible and salubrious influences of electricity, or the elementary fire, air, and magnetism;" and, to cap the climax, its "celestial bed, provided with costly draperies, and standing on glass legs," which insured to married couples who slept on it a beautiful progeny, at the rate of £100 per night, were the product of the fertile brain and cunning knavery of James Graham, M.D., of Edinburgh, whose successes were equaled only by his blasphemy. The following little trick of his is practiced in our own town to-day, and with wonderful results: "Over the doors of the principal rooms, under the vaulted compartments of the ceilings, and in each side of the centre arches of the hall, are placed walking-sticks, ear-trumpets, visual glasses, crutches, etc., left and here placed as most honorable trophies, by deaf, weak, paralytic, and emaciated persons, cripples, &c., who, being cured, have happily no longer need of such assistances."

The last quack mentioned brings us pretty nearly down to our own times. John St. John Long was the son of an Irish basket-maker, and began his career as a "Historical and Portrait Painter," in Limerick. Subsequently, seeking a wider field in London, he was reduced to coloring anatomical plates for the professors of one of the surgical schools, and thus picked up a smattering of anatomy, and got hold of a caustic fluid, which he turned to good account. Taking a large house for the reception of patients, he made it known that he had discovered a liquid which, while innocuous to a healthy person, would irritate and blister the skin of one whose internal organs were affected with any disease. Especially after consumption was it most furious; producing excoriations, out of which the tubercles were drawn almost bodily. His success pecuniarily, was most amazing. Sir Astley Cooper alone is believed to have received such immense sums; and even a conviction for manslaughter, under the most aggravated circumstances, did not diminish materially his popularity. He died young, in the full tide of prosperity, of the very disease which he professed to cure. His handsome face, prepossessing manners, and ready wit, made him an immense favorite with the fair sex, all of whose advances, however, he resisted, for the very good reason that he was already

married, and did not care to risk an action for bigamy, little as that for homicide had damaged him.

The many good stories that are told of Radcliffe, and Mead, and Abernethy, and Akenside, of doctors who loved a good dinner, and doctors who loved a full pocket, and doctors who loved not wisely, but too well, we have only time to advert to. The chapter on "Fees" (Chapter IX.) shows a considerable insight into human nature, as variously affected by health and disease. The English custom of considering the fee a voluntary offering commensurate with the patient's gratitude—a pleasant fiction, certainly—is set down as a piece of most artful policy, designed to increase the amount of the physician's receipts; and certainly the argument which he advances, that the man who feels his life in danger will gladly treble his fees to insure the careful attention of his medical adviser, is one of great force. Our way of doing things here in America, allowing our patient's gratitude to cool off, even down to the zero point, and then sending in a bill for value received, is the most unfortunate that could possibly be devised.

At the close of the sixteenth century, the ordinary fee was ten shillings, and at the commencement of the eighteenth it had not materially increased. The story of the small beginning of Sir Astley Cooper's gains, and their gradual increment, is pretty well known. From five guineas in the first year, they ascended by slow stages to a hundred pounds in the fifth year, and a thousand in the ninth. For many years he kept it at the pretty average of £15,000, and it once ran up to £21,000—more than a hundred thousand dollars. We should probably, any of us, be willing to "pocket the affront," as he did, of a patient's night-cap thrown at us, if it contained a comfortable draft for 1,000 guineas.

From Chapter XXIV., on "Literature and Art," we learn that John Locke, Goldsmith, Smollett, Armstrong, Wolcot, better known as Peter Pindar, Keats, the poet, and Crabbe, were all of our gentle craft.

We are glad to see that the author has, what some of the English medical journals which ought to know better, do not possess, a proper appreciation of the country doctor of to-day. His description of him in England will answer equally well for our own rural districts: "A well-read and observant man; skillful in his art, with a liberal love of science, and in every respect a gentleman." But the country doctors of centuries gone by were certainly, as a rule, no credit to the profession. Probably few of us knew before that Andrew Borde, "author and buffoon, as well as physician," was the original "Merry An-

drew." They are, however, all redeemed and elevated by the great conception and untiring perseverance of him who conferred a greater boon on the race than any of his city brethren, and with whose picture we will bring these desultory notes to a close, as we began them with that of the not less great Harvey.

"When I first saw him it was on Hampton Green. He was dressed in a blue coat and yellow buttons, buckskins, well-polished jockey boots, with handsome silver spurs, and he carried a smart whip with a silver handle. His hair, after the fashion, was done up in a club, and he wore a broad-brimmed hat." "Such was the appearance of Jenner, as he galloped across the vale of Gloucester, visiting his patients." "Jenner was a simple, unaffected, devout man. His last words were, 'I do not marvel that men are grateful to me, but I am surprised that they do not feel gratitude to God for making me a medium of good.'"

None but a great as well as a devout mind could have been capable of such a sentiment at such an hour.

We would willingly linger longer over these pleasant pages, but neither time nor space allow. We trust we have said enough to induce some of our readers to indulge themselves in a further acquaintance with the worthies whom they commemorate, which, thanks to the enterprise of Messrs. Rudd & Carlton, they may do without the fearful drain upon their pockets which the possession of the English edition made necessary. ☞

EDITORIAL AND MISCELLANEOUS.

Salutatory. VIVIMUS, We still live.—"A self-evident proposition," you may say, dear Reader, "and requiring neither assertion nor proof." But we have thought it well to state it thus objectively, for two reasons: First, Because many of our contemporaries, yielding to the pressure of these sad, sad times, no longer perform that troublesome, and yet strangely fascinating function. From North, East, South, and West, exchanges whose friendly faces were wont to greet us each month, now cease to gladden us with the light of their countenances. Some have fallen, like the soldier, bravely fighting, and left scarce a word of farewell. Others have pronounced their benediction, decently covered their head, turned their face to the wall, and

gently breathed their last; while others still, proclaim that they are not dead, only suspended, and lead us to hope to see them once again, when the stars shall be more propitious. Therefore it is that we assert our continued existence—not in a spirit of pride or self-gratulation, but rather of thankfulness, that our State and City have still so great a degree of prosperity vouchsafed to them, and that a kind Providence has thus far stayed the hand of war from our borders. Secondly, Because, not without reason, it has been surmised, in various quarters, that the unpleasant reverse was the case. The long but unavoidable delay in getting out our few last numbers, more especially that of December, the month which has seen so many decidences, has awakened the suspicion that we were among them. These delays, as we have just said, have been unavoidable, the result of the absence of the Senior Editor, on business of the Sanitary Commission, and of the unsettled condition of matters generally, of minds especially, and of the editorial mind in particular. For the former reason we have no apology to offer. The sacrifices which Dr. DOUGLAS is at present making, in giving his entire time to that very essential part of the public service, are certainly not for a moment to be put in the balance against the slight inconvenience which the individual subscriber may suffer in finding his Journal a few days or weeks behindhand. For the latter we can only express our determination that with the new year, a new order of things shall be inaugurated.

The NEW YEAR!—With what portentous aspect does it——but stop! we had quite forgotten our manners! Allow us, dear Reader, and more particularly dear *Subscriber*, to wish you the "Compliments of the Season!" May the New Year be a happy one! And until it has grown hoar with December's frosts, may you be blessed with a sound body, a clear head, a good appetite, an easy digestion, and "a conscience void of offence towards God and towards man!" We are glad that we checked ourselves in the mournful peroration on which we were about launching. Science has no business with tears in its eyes; and besides, if we had worked ourselves up into a state of maudlin excitement on the "state of the country," we might have roused our sensibilities to such a degree, that we should have felt a delicacy in referring to the little matter of unpaid subscriptions, which we nevertheless feel to be our bounden duty. With the nation and the war, you and I, in our mutual relationship, have nothing to do. Rather let us tell you what we propose to afford, in return for your continued patronage, during the coming twelve-month.

Our original contributors are well known to all our readers. We can promise a continuance of valuable articles from them, with the prospect of new additions to their list.

The well-selected translations from German and French authors and periodicals, which have appeared during the past year, will be followed by others of equal interest from the same sources.

In addition to this, arrangements have been made with physicians, all well known in this city, and many of them of wider fame, to furnish QUARTERLY REPORTS on the various leading departments and specialties of Medicine, conveying a clear idea of the advances which have been made in each during the preceding three months, and of their ultimate value. We call particular attention to the able Report of Professor STILES in our present number.

Dr. ELSBERG's Reports are not a novelty to our readers, and their continuance, on the special branch of Materia Medica, will, we doubt not, be welcome. The amount of research which the preparation of his work on *New Remedies*, announced in our last number, has necessitated, peculiarly fits him for the department.

Among other names, we may mention those of Dr. T. GAILLARD THOMAS, on *Obstetrics* and *Diseases of Women;* Dr. JACOBI, on *Diseases of Children;* Dr. J. J. HULL, Curator of the New York Hospital, on *Surgery;* and Dr. M. BLUMENTHAL, on the *Practice of Medicine.* Besides these regular Quarterly Reports, we shall present occasional reports on Ophthalmology, Syphilography, and other specialties. We shall aim to have two of these Reports in each number; but as our responsibility for them ends with this announcement, we shall not consider ourselves reprehensible for any failure in the promptness of their appearance. For our personal self we can only say, that if devotion can atone for inexperience, we shall not be found wanting. The high standard which the MONTHLY has ever maintained for interest, usefulness, catholicism, and professional courtesy, it shall be our aim to sustain.

SUBURBAN HOSPITALS.—St. Thomas' Hospital, in London, has been sold to the Charing Cross R. R. Co., for the sum of £296,000, nearly a million and a half of dollars; and this even is only a little more than one-third what the Governors of that institution claimed. A clever little sum, certainly, and quite adequate to build a second St. Thomas' elsewhere. But what does an R. R. Co. want of a hospital? Have things got to such a pass in the dear mother-land that passengers are not only waited upon by officious agents with offers to insure their lives against accident, as they step into the train to take a day's air-

ing in the rural districts, but also have a hospital provided (at the expense of the R. R. Co.) for them, should their little pleasure trip be brought to an untimely end by a fracture of the leg? They might find it less expensive, in the end, certainly, to provide hospital accommodations and cork legs, or even Palmer's inimitable limbs, for their victims, than to pay damages; but the moral effect upon the pleasure-seeker would be unquestionably depressing. But not so. The Company buys the premises, we presume, simply to tear them down that they may make way for the march of improvement; and the insurance-nuisance is the only death's-head which will for the present disturb the peace of the susceptible tourist. But now comes a question for the Hospital. Having pocketed its $1,480,000, and "taken up its bed," or beds, whither shall it walk? To some point in the immediate vicinity, says the *Lancet*—where it can avail itself of the stenches of Thames sewers, the filth of gutters, and the healthful emanations arising from the operation of living performed by a large number of human beings closely crowded together under hygienic conditions not the most favorable, so that its well-established rate of mortality may not be materially interfered with. "Nay," makes answer the valiant little *Medical Circular*—rather, as it has got on its legs at last, let it continue its perambulation to some site where it can pursue its vocation with more profit to its inmates; let it leave the crowded, reeking metropolis, and seeking some grassy slope, seat itself there in the sunshine, and open to heaven's breezes, and let us see if there do not more live men and fewer long boxes go out of it than was its wont while it squatted at the foot of London Bridge.

This idea of a suburban hospital, the *Lancet* styles "Sanitary Insanity." To which the *Circular* replies that it is willing to oppose its "madness to the foolishness of its venerable contemporary." It was not to call attention to this gentle bandying of compliments that we introduced the subject, but to advert to the fact which is already beginning to be well understood in this country, that large hospitals must be located elsewhere than in the midst of densely-crowded cities. Our own city, with its immense frontage of salt water, possesses great advantages in this respect. And yet, Bellevue, even with its windows opening right on the water, and receiving almost a sea-breeze, cannot be approached without passing through a district which, even at this cold season of the year, is redolent of anything but Cologne. We may justly be proud in this regard of our noble Island Hospitals, which nothing but gross internal mismanagement can ever make unwholesome. Fresh air is deeded to them by an irrevocable decree.

The New York Hospital is now the only one of any considerable size remaining in the heart of the city, and its Governors have long had in mind the project of removing it to the upper part of the Island, where it could hope, for years to come, at least, to enjoy an immunity from crowding. All that is wanted in the city is a comparatively small Receiving Hospital, or several of them in different sections of the town, where accidents may be taken, and temporarily treated, or, if it be impossible to move them, permanently: but accidents, as is well known, constitute a comparatively small proportion of the surgical cases that are treated in any large institution—all others could quite as well go a mile or two out of town as the same distance in town.

— The proceedings of the *Academy of Medicine* for the past month have been marked by an unusual degree of interest, and a not unusual degree of indecorum. The reading of Dr. Barker's able paper on "Anæsthetics in Midwifery," and the discussions upon it, called together a large concourse of professional men, both in and out of the Academy, on three evenings. The paper itself has been already noticed in our last issue. Dr. G. T. Elliot, who occupied the greater portion of the second evening, agreed in the main with the author of the paper—the principal point of difference being as to the effects of chloroform on the nervous system; the latter considering it a stimulant, while the former regarded it as almost uniformly a depressant: a distinction probably dependent upon the differing degrees of anæsthesia which they are in the habit, respectively, of inducing.

Dr. Peaslee took exception to the thesis, that chloroform was the *safest* anæsthetic agent, as he did not consider that it had been established by the paper. Dr. Watson animadverted very strongly upon the same point, as well as upon instrumental interference in obstetrics. We must submit that the charging of one fellow-Fellow with malpractice, and another with deliberate falsehood, is a procedure scarcely consistent with the dignity of a grand scientific body, and one that ought not to have been passed over in silence by the Chair.

The extending of the right hand of fellowship, and of professional hospitalities, to the Surgeons of the French war-ships in our harbor, on the part of the Academy, was a refreshing little act of genuine courtesy, for which we are indebted to the nice perceptions of Dr. Detmold. We only hope that in case these gentlemen accept the invitation of the Academy to be present at its meetings, they will not be asphyxiated by the foul air of the room in which its deliberations are held, or shocked by the ungentlemanly air of many of its members.

At the meeting on Friday evening, January 3d, the annual election was held. It resulted as follows: *Vice-President*, Dr. H. D. BULKLEY; *Recording Secretary*, Dr. J. H. HINTON; *Trustees*, Drs. J. FOSTER and J. R. VAN KLEEK; *Treasurer*, Dr. J. O. POND; *Committee on Admissions*, Dr. H. D. BULKLEY; *Committee on Ethics*, Drs. A. C. POST and A. UNDERHILL; *Committee on Education*, Dr. J. G. ADAMS; *Corresponding Secretary*, Dr. J. G. ADAMS.

— The *Pathological Society* continues its labors in behalf of science in its usual business-like, unostentatious manner. At the annual election, held Wednesday evening, January 8th, the following officers were elected: *President*, Dr. T. C. FINNELL; *Vice-Presidents*, Drs. L. VOSS and D. S. CONANT; *Secretary*, Dr. GEO. F. SCHRADY; *Treasurer*, Dr. WM. B. BIBBINS. The honor conferred on Dr. FINNELL is only a well-merited recognition of the value of his collaboration for many years past.

— The *Medical Times* of December 28th notices the death of Dr. Buist, a surgeon in the rebel army, and formerly of Bellevue Hospital. We suppose that the *Times* has good ground for its assertion that this *was* the Dr. Buist who was House Physician to Bellevue. We had been at some pains to inquire into the matter, and had been credibly informed that it was not himself, but a relative of his. The Dr. Buist referred to by the *Times*, we knew intimately. He was our Junior at the Hospital, and we were thus thrown into daily intercourse with him; and a more gentlemanly, modest, unassuming, and at the same time intelligent and cultivated man, we have rarely known. If it be that he has thus early fallen a victim to this wretched rebellion, there will be sorrowing hearts at the North as well as the South. He died as a physician should, *at his post*.

BOOKS AND PAPERS RECEIVED.

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